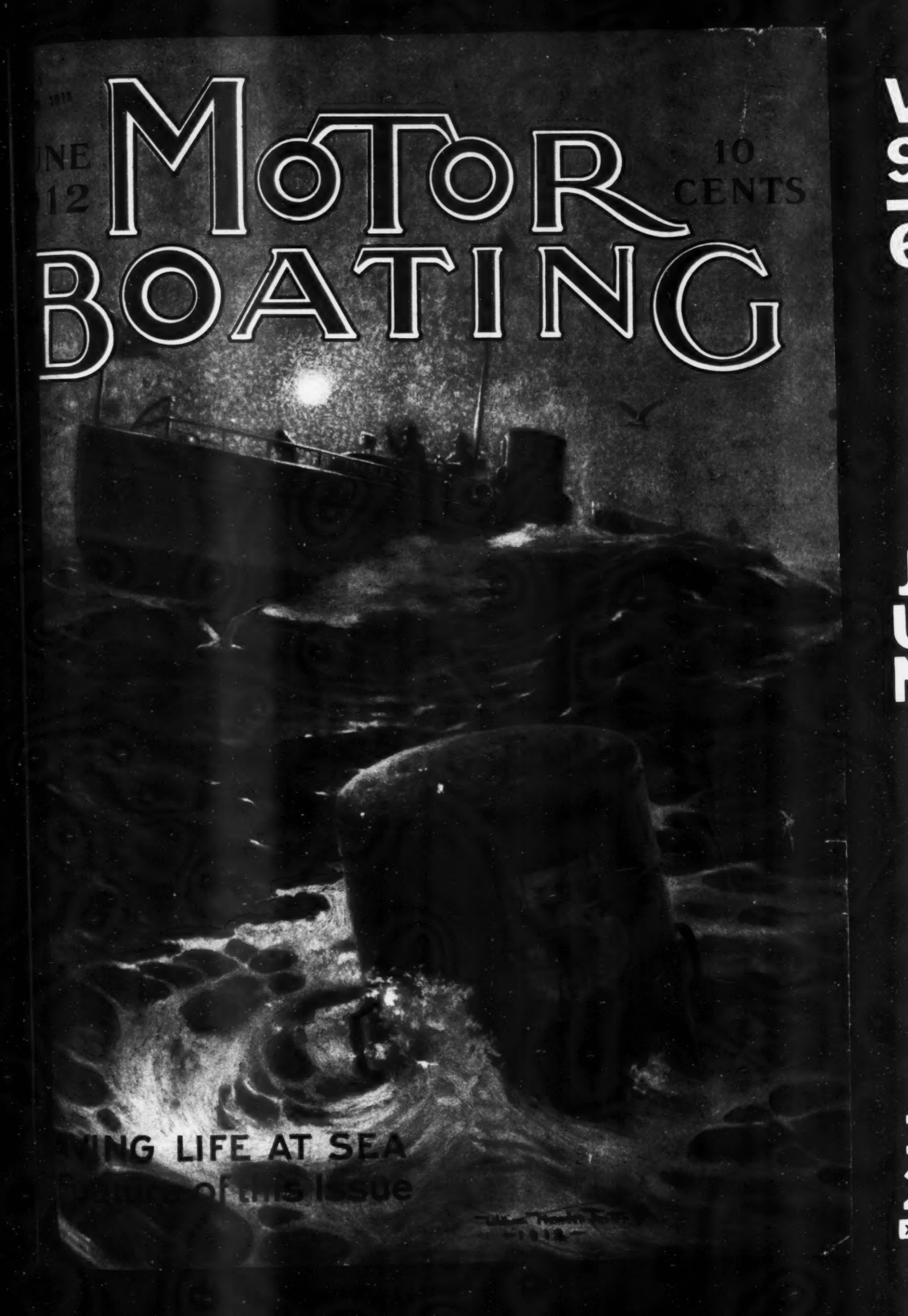
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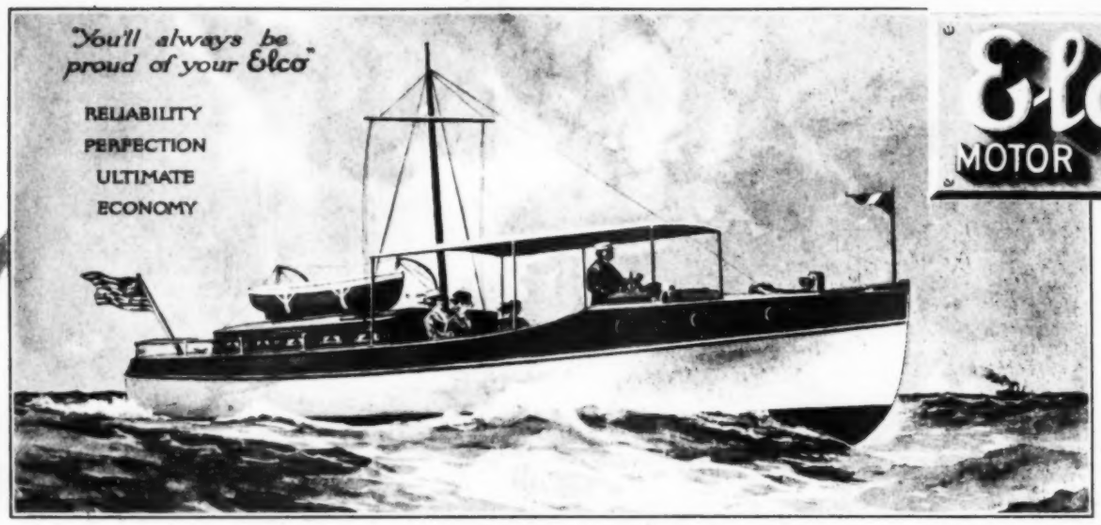

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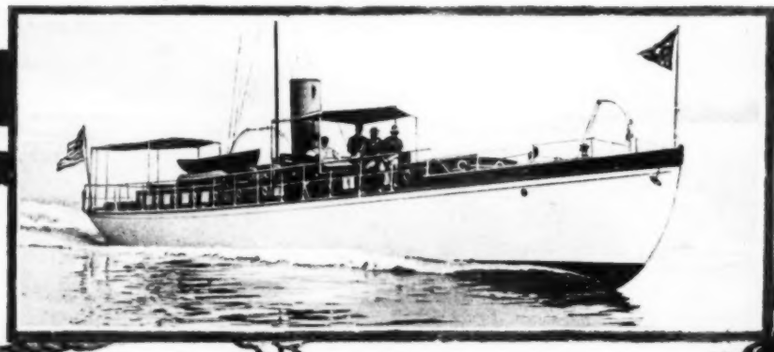

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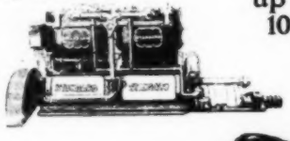

"Power up to 1000"

CONTENTS

JUNE 1912

To help the publishers of the magazines, and of this magazine in particular, if you do not receive your copy within one day of the usual time, will you kindly inform your local postmaster and ask him to start an inquiry?

The National Magazine of Motor Boating

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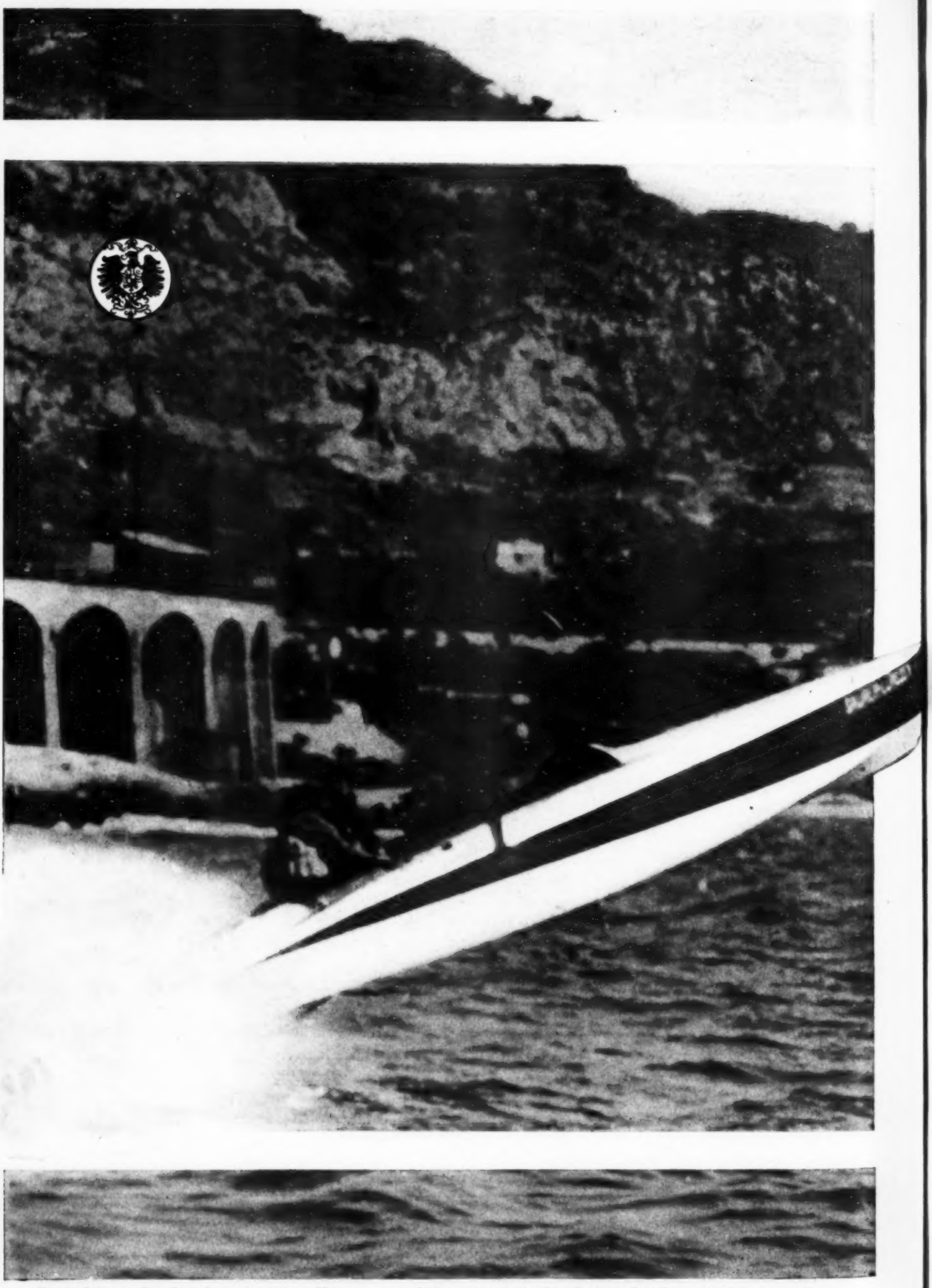


Saurer-Lürssen jumping clear of a sea at Monaco—one of the most spectacular photographs of a motor boat ever taken.

MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING

What Happened at Monaco.

Ninth Annual Motor Boat Meet—The International Struggle for the Speed Supremacy of Europe.

By Robert Fletcher.

Special Representative of Motor Boating.

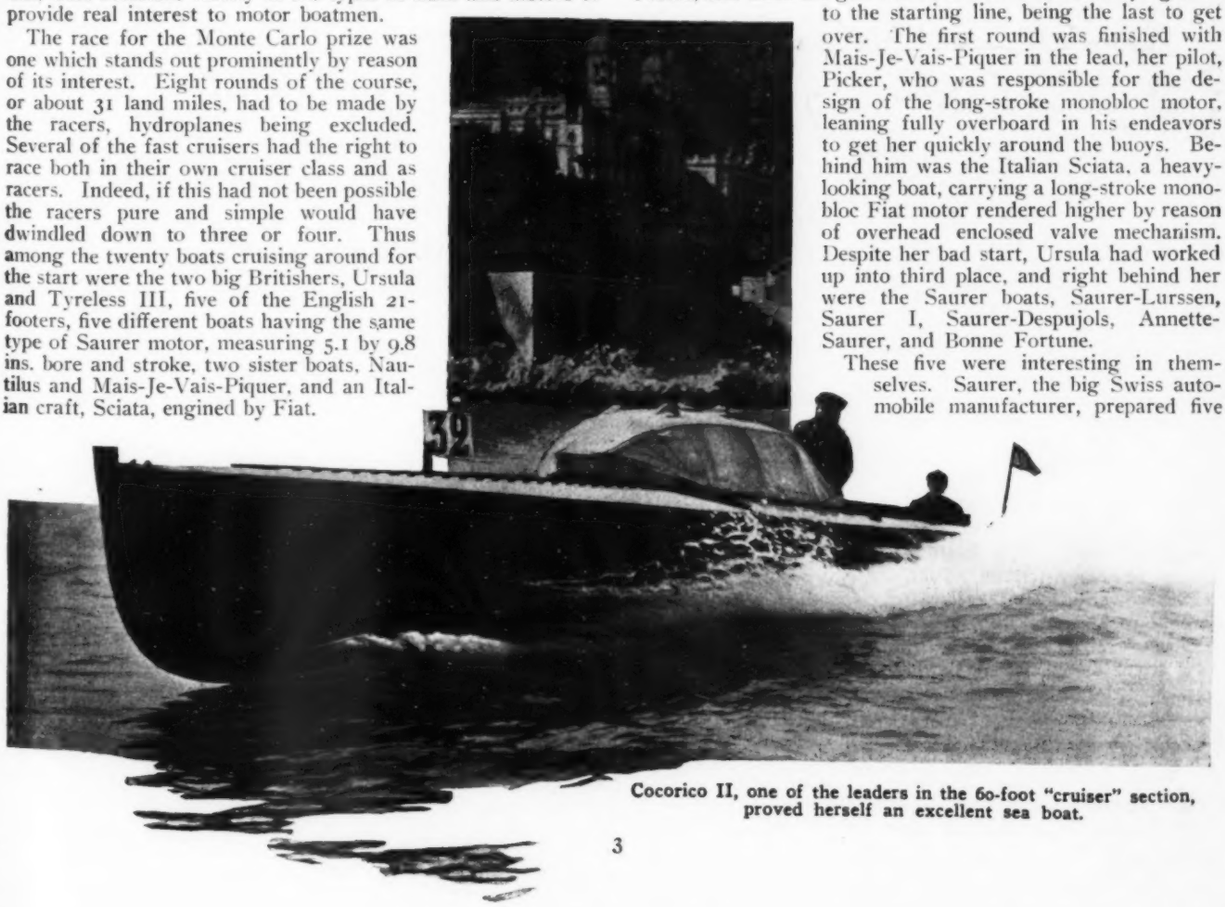
Although the contest for the British International Trophy has become the most important single event in the motor boat world, the Monaco Meet still holds the lead as the world's greatest general regatta. This year 181 boats were entered from several of the countries of Europe, and a great percentage of them put in an appearance. Last month Mr. Fletcher described the boats which were on exhibition before the races, and in this article he tells us of the actual performance of these boats in competition. The foreign method of classification, and in fact their whole way of doing things, to say nothing of the performances of the boats themselves, will be found extremely interesting by all those who follow motor boat racing.—EDITOR.

OUT of eleven open races at the Monaco meeting eight were run in faster time than a year ago, which is sufficient evidence of improvement in all classes of boats. As all classes were well filled, there was good racing throughout, with sufficient variety in the types of hulls and motors to provide real interest to motor boatmen.

The race for the Monte Carlo prize was one which stands out prominently by reason of its interest. Eight rounds of the course, or about 31 land miles, had to be made by the racers, hydroplanes being excluded. Several of the fast cruisers had the right to race both in their own cruiser class and as racers. Indeed, if this had not been possible the racers pure and simple would have dwindled down to three or four. Thus among the twenty boats cruising around for the start were the two big Britishers, Ursula and Tyreless III, five of the English 21-footers, five different boats having the same type of Saurer motor, measuring 5.1 by 9.8 ins. bore and stroke, two sister boats, Nautilus and Mais-Je-Vais-Piquer, and an Italian craft, Sciata, engined by Fiat.

The sea was sufficiently rough to make conditions look ticklish for the gliding boats, for although officially known as displacement boats, several of the starters were gliders pure and simple. Robins, in his nonchalant way, ran out to sea with Ursula, and when the gun was fired had to come hurrying back to the starting line, being the last to get over. The first round was finished with Mais-Je-Vais-Piquer in the lead, her pilot, Picker, who was responsible for the design of the long-stroke monobloc motor, leaning fully overboard in his endeavors to get her quickly around the buoys. Behind him was the Italian Sciata, a heavy-looking boat, carrying a long-stroke monobloc Fiat motor rendered higher by reason of overhead enclosed valve mechanism. Despite her bad start, Ursula had worked up into third place, and right behind her were the Saurer boats, Saurer-Lurssen, Saurer I, Saurer-Despujols, Annette-Saurer, and Bonne Fortune.

These five were interesting in themselves. Saurer, the big Swiss automobile manufacturer, prepared five



Cocorico II, one of the leaders in the 60-foot "cruiser" section, proved herself an excellent sea boat.

motors, similar in every respect, and placed four of them in Despujols hulls and one in a Lurssen boat. The motors had their cylinders in pairs, with valves carried vertically in the head, operated by two camshafts, push rods, and overhead rocker arms. Bonne Fortune was a substantial, well-protected sea-going cruiser; Saurer I, Saurer-Despujols, and Annette-Saurer, were a development of the semi-hydroplane type introduced by Despujols last year, while Saurer-Lurssen was a most extreme type which quickly earned for itself the title of Flying Fish. After two days' trials, during which she had behaved in a most extraordinary fashion, her bottom was broadened at the stern. Even with this change she ran with all her fore portion out of water, and at times would toss up her bow in an alarming manner, and more than once jumped clean out of the water as shown in the remarkable photograph on the frontisipece of this issue. The three Despujols boats, on the other hand, had a tendency to dive

Saurer I was fitted with bilge fins to help her plane.

Above, Saurer-Lürssen, the spectacular German boat and below, Sigma III, winner of the Prix de Monaco for hydroplanes.

and were successively fitted with inclined fins on each bow.

After keeping in second place for two rounds, Mais-Je-Vais-Piquer slowed, for her flat-bottomed, punt-like hull was beginning to take water, and after six rounds she went home, leaving it to her sister boat, Nautilus X, to finish for the firm. Ursula showed her superiority after two rounds, and the real struggle was between the German Saurer-Lurssen, the French boat Saurer I, and Nautilus X. Although Saurer I behaved much better than Lurssen, the latter got through—or rather over—the water at a slightly faster pace, and finished second with the advantage of about a minute and a half. Nautilus X, which came in fourth, had not been pushed hard, her pilot being well aware that the hull would not stand much pounding.

The English boat Tyreless III, proved herself steady and reliable, but was not brilliant in the matter of speed. Sciata had to run home with a broken lubrication feed pipe, and the little English 21-footers were obviously no match for the bigger boats.

The meeting only brought together three hydroplanes (with steps), two of which, Motocratie and Sigma III, had been built by Despujols and engined by Panhard. The third was Pistil, a boat of very little interest, and no match for the others with her four-year-old Panhard motor.

When the hydroplanes came together for the Prix de Monaco, the two owners, Soriano and Bariquand, were at the wheels respectively of Sigma and Motocratie, and Despujols was in charge aboard Pistil. Motocratie ought to have had no difficulty in winning, for while Sigma had but one Panhard motor, she had two, set side by side, of exactly the same type. Soriano, however, had the advantage of knowing how to handle his craft, while Bariquand was totally unable to get round the turns without cutting out the ignition for a few seconds. It was not a question of boats, for their design was practically the same, and when Despujols took the helm in a later race he showed that Motocratie could be steered as well as Sigma. Thus for eight rounds the bigger boat chased the smaller one, gaining on her on the straightaways and invariably losing on the turns. The distance between them was so slight that it was exasperating to the spectators to see Motocratie throw away her chance every time she had to get round the buoys. Pistil dropped behind at the outset and really never figured in the race.

The 40-foot cruisers—or racers, as occasion demanded—met as cruisers in the race for the Cote d'Azur prize, when the five Saurer boats and the two Pickers (Nautilus and Mais-Je-Vais-Piquer) were the most important figurants. The German Saurer-Lurssen set the pace, kept the lead for a round, fell into second place for the second round and then dropped out. Saurer I and Saurer-Despujols, practically sister boats, then fought it out with Mais-Je-Vais-Piquer and Nautilus X, also sister boats. The racing was keen, with only seconds separating the first four boats, but the order did not change after the second round, Saurer I coming in first in

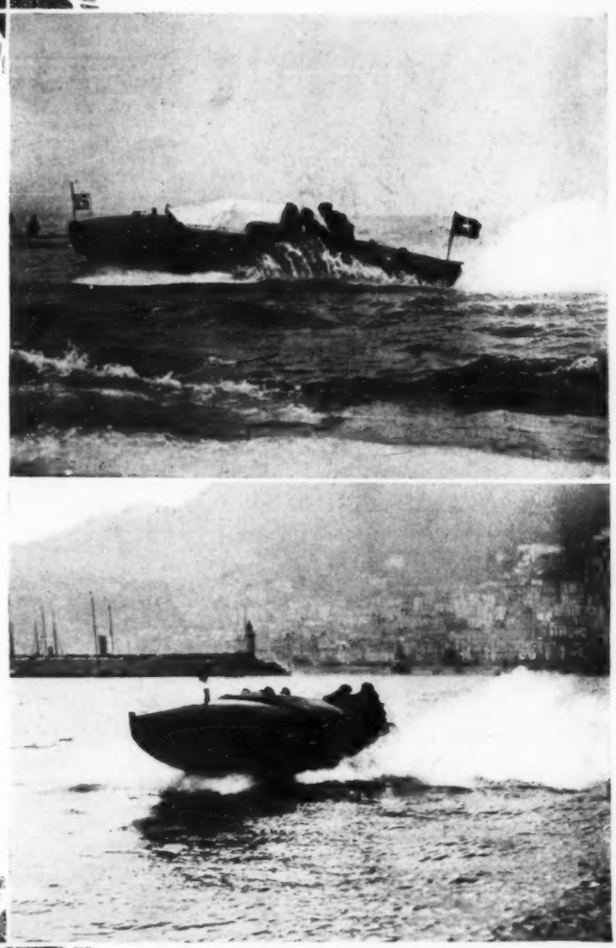
Saurer-Despujols, rated as a displac ement boat, is really a monoplane.

Ursula, the Duke of Westminster's, 50-footer, won the Prix de Monte Carlo, the Coupe des Nations and the Omnium race for cruisers.

four minutes better time than last year's winner. Indeed all the five boats to finish were faster than the winner a year ago.

Surprises rarely fail to be provided in the Championship of the Sea, and this year was no exception. The forty starters in this 125 mile race dwindled down to about ten really serious competitors, among which the Saurer boats and the Nautilus figured most prominently. While coming up to the starting line there was a dramatic collision between the big cruisers Gama and Bonne Fortune. Gama struck Bonne Fortune on the port quarter, slightly abaft the engine, mounting right on to her, carrying away, in addition to the woodwork, such gear attached to the rear of the motor as the magneto, starting crank, throttle control, etc. Bonne Fortune was brought home a total wreck, while Gama got home with nothing more serious than a hole in her bow. The men aboard Bonne Fortune just jumped clear in time to avoid being killed, and one of them, having been thrown out of a Despujols boat on the Seine a few days before, the boat capsizing about twenty yards farther on, decided to do no more racing for the remainder of the meeting. This accident removed one of the best boats, for Gama was a big reliable cruiser having one of the new Brasier motors of 6.1 by 11.8 inches bore and stroke. Thirty-two rounds of the course had to be covered. After four had been reeled off, Mais-Je-Vais-Piquer was in the lead, with Saurer I a couple of lengths behind. Later, Annette-Saurer went out with valve trouble; Excelsior dropped one of the blades of her screw; the little Hispano-Suiza struck some wreckage; Gregoire VIII had engine trouble and fell far in the rear. Still Mais-Je-Vais-Piquer and Saurer I fought it out, the difference between them varying from 10 to 50 seconds per round. It was one of the most persistent races ever seen at Monaco, and right up to the end the result was doubtful. Saurer I was looked upon as the more substantial boat, and she also had the advantage of 1/5 inch greater cylinder bore than her rival; their piston strokes were the same. But since her earlier races, Mais-Je-Vais-Piquer had had her bottom considerably strengthened and sheathed with metal. This gave the pilot confidence and he used the motor to the full. With only one round to run, the result of the race was still in doubt when Saurer I stopped and signaled for a tow. The tremendous pounding had set up a leak in her gasoline tank; her fuel was exhausted. Mais-Je-Vais-Piquer won, and having been pushed to the limit from beginning to end, clipped about one hour and a quarter from last year's fast time. Cocorico II, with a Brasier motor similar to the one aboard Gama, finished second, while Gavroche and Gregoire VIII were respectively third and fourth.

The Coupe des Nations is the only international race at Monaco, being open to three picked boats from each nation, *the motor determining the nationality*. It was held under such rough weather conditions that the hydroplanes, although qualified, refused to start. This reduced French representation to one boat, Cocorico II, prevented Dyack starting for England, and caused Annette-Saurer to replace Mais-Je-Vais-Piquer for Switzerland. The sea was so heavy that Robins took a man forward with him to help him hold Ursula, and on no occasion did he attempt to cut very close round the buoys.



Mais-Je-Vais-Piquer, winner of the Championship of the Sea, and Motocratie, the conqueror of Ursula in the mile and flying kilometer.

During the fourth round Tyreless was seen to be in trouble. Her port rudder had pulled away under the tremendous strain, had fouled her starboard rudder, leaving her helpless. When the tug bore down on her there was a slight collision, as the result of which Tyreless sustained injuries to her bows. She had to be towed home, but was ready for racing again next day. Sciata went home with her lubricating system giving trouble. The race was not interesting, owing to the overwhelming superiority of Ursula; there was a certain amount of competition between Saurer I and Annette-Saurer, but the motor of this latter gradually weakening, Cocorico stepped into third place and Annette gradually dropped back. Instead of the usual 16 rounds, the boats had to cover 24, but this lengthening of the race did not add to its interest. In view of the bad weather

(Continued on page 42)

Gavroche won the Prix de la Mediterranee.

SAVING LIFE AT SEA

Since the recent disaster we have heard a great deal about life saving at sea and many devices have been proposed and discussed in the papers but with all this discussion very few of us have gained any definite idea, for instance, of what a collapsible lifeboat actually looks like or how a Welin Davit works. Realizing that boatmen in particular are interested in this subject, this article has been prepared and illustrated with actual photographs of life saving devices.—Editor.

By Waldon Fawcett

TRAGEDY has very often been the price of progress in the marine field and accordingly it is but to be expected that the Titanic disaster will have as its sequel a betterment of means and methods, the need or possibility of which could only have been emphasized effectually by just such a costly object lesson. The Titanic disaster has been, however, decidedly unusual in that the disclosures have pointed a moral not merely for steamship practice on the high seas, but in varying degree for the whole sphere of navigation. The explanation is found, of course, in the fact that the lessons taught by the Titanic's undoing have had to do largely with life-saving devices and signaling apparatus—equipment which, in its various forms, is so standard that it is found, in due proportion, on every craft from the smallest motor boat to the largest ocean liner.

A collapsible boat of the kind used on the Titanic. The bottom is of wood and the sides are canvas.

The simplest, the most universally used and, in a measure, the most indispensable of all life-saving devices is the life-belt or the life-preserver. Self-sufficient in many instances, it is also designed to supplement every other device in this whole field, and the wise individual, even if he has opportunity in an emergency to take to a life-boat, will first of all don a life-belt, even though it seem a superabundance of caution. The most familiar type of life-belt is made of pieces of cork or light wood covered with canvas and is supposed to have sufficient buoyancy to support a man, heavily clothed, with his head and shoulders above water and to enable him to support another person beside himself.

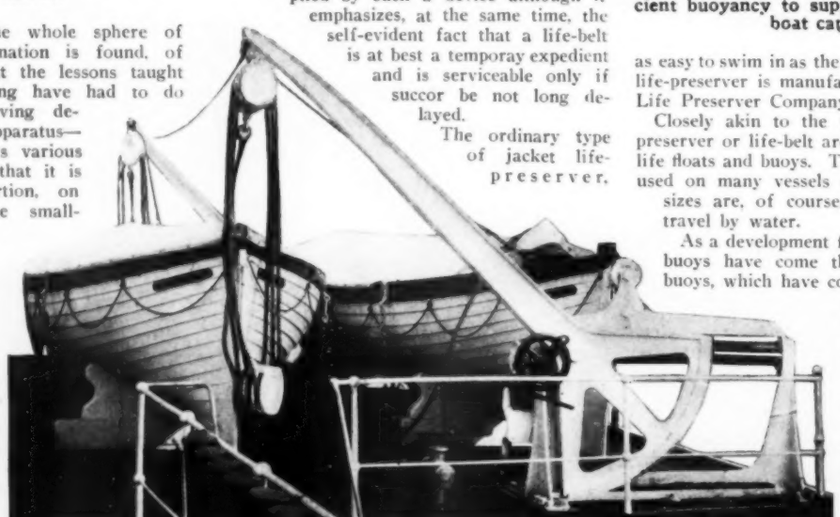
The efficiency of the life-belt within its limitations has been repeatedly proven. Indeed, the handicaps that exist are those furnished by the conditions under which the life-belt must often be used rather than due to any lack in the device itself. Men have frozen to death in life-belts; others have died from heart failure induced by the shock of sudden immersion in icy water; and finally there have been instances where men starved to death buoyed up all the while by life-belts. The fact that the bodies of many victims of the Titanic were kept afloat for days by the life-belts but constitutes further proof of the buoyancy supplied by such a device although it emphasizes, at the same time, the self-evident fact that a life-belt is at best a temporay expedient and is serviceable only if succor be not long delayed.

The ordinary type of jacket life-preserver, however, is apt to throw the head forward until the face is submerged, if it is improperly tied around the waist. A modification which will prevent this is a form of life-preserver that fits around the neck and can be put on in a few seconds by anyone without previous instruction. It keeps the head above water at all times and without effort, making it impossible for one to upset and is equally as easy to swim in as the regulation type. This life-preserver is manufactured by the Human Life Preserver Company, of Long Branch.

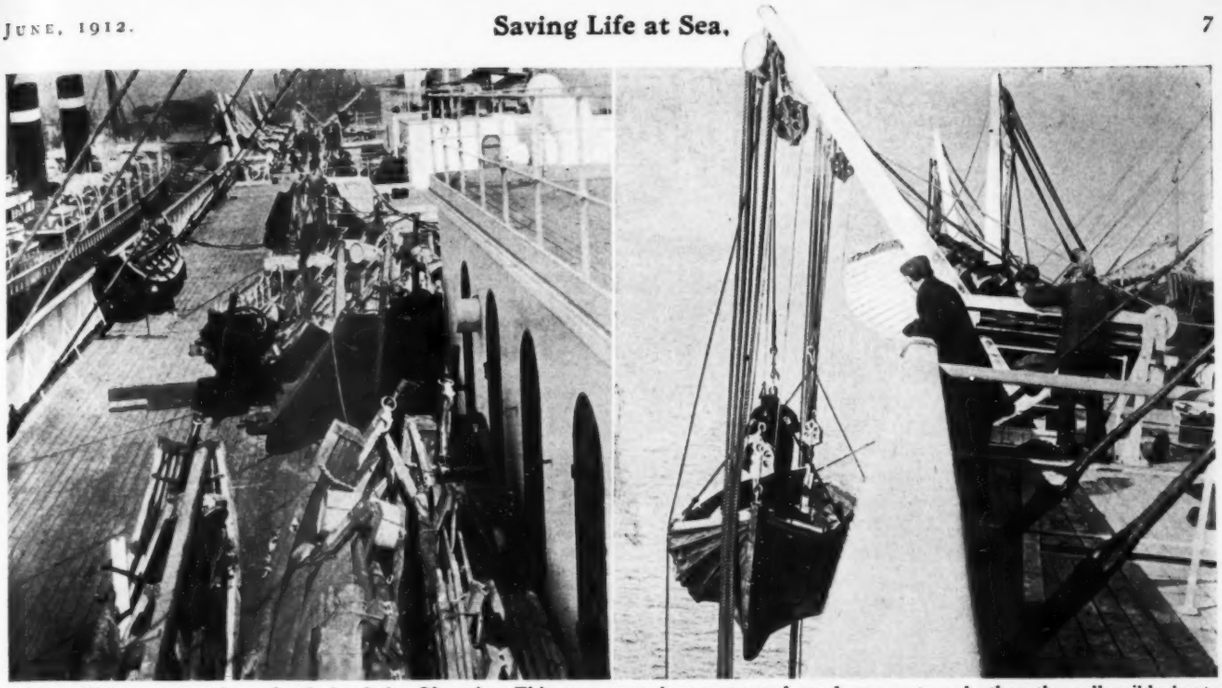
When in use the cross members swing down to keep the boat extended. Note the large cork filled fenders, which have sufficient buoyancy to support the crew if the boat capsizes.

Closely akin to the familiar type of life-preserver or life-belt are the various kinds of life floats and buoys. The ring buoys that are used on many vessels of various kinds and sizes are, of course, familiar to all who travel by water.

As a development from the standard ring buoys have come the so-called luminous buoys, which have come into extensive use in recent years and which have the tremendous advantage that when used at night they enable the "man overboard" to locate the buoy which has been thrown to him and on the other hand enable the succoring party afloat or ashore to ascertain the position of the buoy when it is in the water.



The Welin Davit greatly facilitates the launching of lifeboats, as they are swung clear of the ship's side by merely turning a crank. Although equipped with these davits, the Titanic had but one boat to each set whereas she might have had two, as shown here.



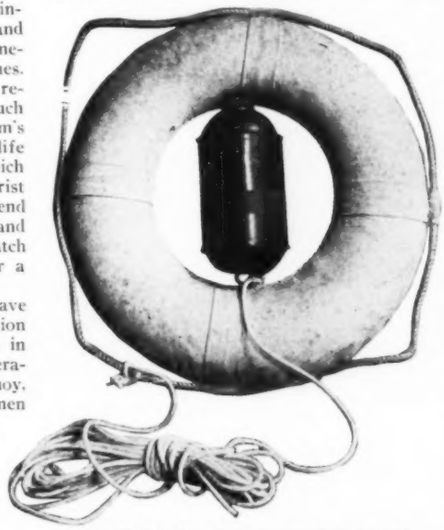
Folding lifeboats stowed on the deck of the Olympic. This type may be constructed much more strongly than the collapsible boats on the opposite page and may be launched from davits as shown.

The average luminous buoy consists of a cork or hollow metal ring carrying a cartridge filled with a mixture which ignites or becomes luminous on contact with the water. Even these devices have their disadvantages. There was formerly much complaint that the inflammable cartridges were dangerous and difficult to handle and the cork rings sometimes caught fire from the attached torches. This latter menace has, however, been removed by the introduction of metal buoys such as are now used exclusively on Uncle Sam's naval vessels. A feature of all of these life buoys is the ease and dispatch with which they can be released. A twist of the wrist or a slight pull at a trigger will serve to send one of these beacon buoys into the water, and at night the burning port-fire or slow-match will indicate the position of the buoy for a considerable time.

Of the life-saving devices that also have place in this branch of the field, mention should be made of the life-ring, which is in appearance and in the principle of its operation nothing more than a gigantic ring buoy, but which will support more than a dozen men —as though in a huge tub—while the ordinary ring buoy is, of course, designed for the use of only one person.

Life-preserver cushions are coming more and more into general use, and there are many types of cushions at present that are approved by the United States inspectors, to be used in place of the regulation life-preserver. One of these, manufactured by John C. Hopkins & Company of New York City, is illustrated. They are stuffed with a soft non-absorbent Java fibre which is impervious to water and has four times the buoyancy of cork. The covers can be made especially decorative by reproducing on them the club signal or private burgee.

The life-boat always has been and probably always will be the main dependency of persons imperilled at sea, except in those cases where disaster comes so swiftly that time is not allowed for resort even to this means of escape.

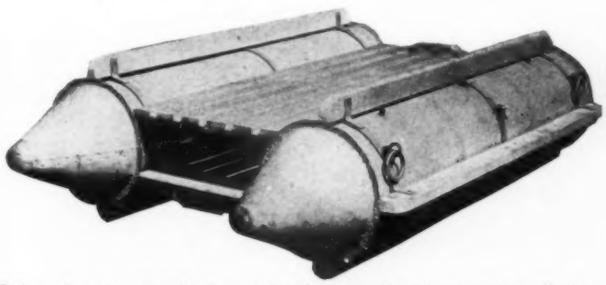


A self-lighting device attached to the ordinary ring buoy.

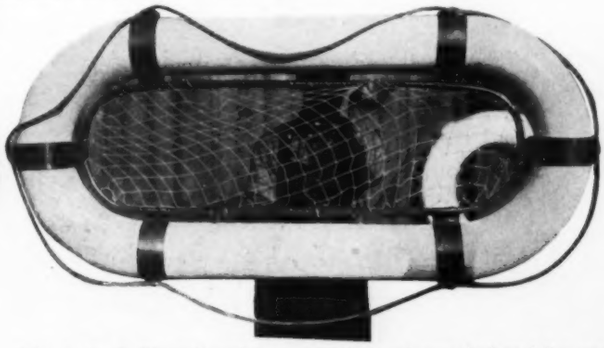
In the matter of life-boats, as in almost everything else, time has brought about some changes of opinion. Until a comparatively few years ago the wooden life-boat was in universal use and it is yet predominant in point of numbers, but gradually the metal life-boat has won a place for itself. Similarly, in days gone by, oars were the only means of propulsion considered in connection with life-boats, but to-day we seem to be on the eve of the triumph of the motor life-boat. The U. S. Life Saving Service—leading the world in this as in all its other activities—has for some time past been using life-boats and surf-boats equipped with gasoline engines and has nearly 150 of these power boats in commission. These boats, however, do not come within our subject and were thoroughly described by Mr. Nutting in the January issue of MoToR BoatinG.

The officials of the U. S. Steamboat Inspection Service appear to be about ready to authorize the use of motor-driven life-boats on ocean steamers. Probably such authorization would have come long ago save for an ultra-conservative view of the problem of storing the gasoline necessary for fuel.

The United States governmental regulations sanction not only wooden life-boats and metal life-boats, but also collapsible boats such as those which have come into considerable prominence in connection with the Titanic disaster; but under our Federal regulations a steamer has been allowed to have not more than one-third of her required boatage in the form of these collapsible boats. These collapsible or folding boats are usually constructed largely of canvas, and although in public demonstrations they have withstood some severe tests they are neither very strong nor durable. Naturally they are preferred by many vessel masters and owners because of the economy of room which they allow, it being customary to nest two or three of these collapsibles under one set of davits.



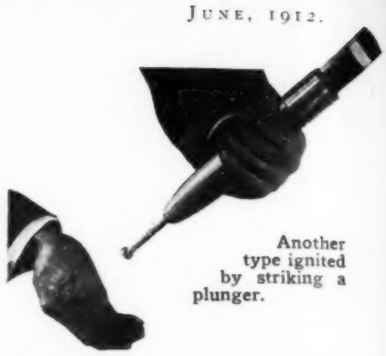
Life rafts of galvanized metal tubes are found on many of the steamships.



The A. B. C. life raft weighs but 45 lbs. and was designed for use on motor craft.

The self-lighting metal ring buoy carried on our battleships and many liners may be released by the turn of a key. When in the water the weighted ends of the torches swing down and the chemicals they contain are brought into contact with the water, which ignites them.

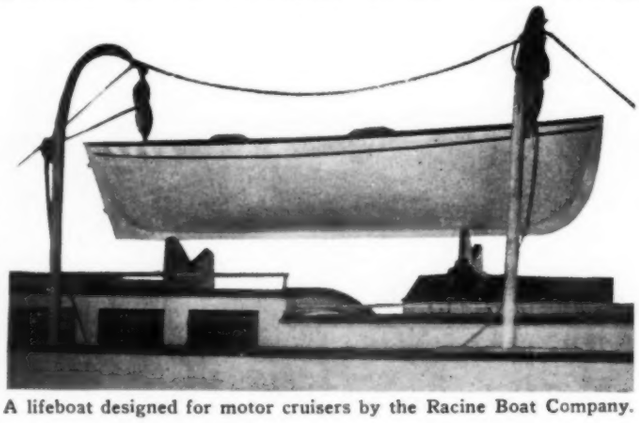
A caston torch ignited by breaking off the cap and rubbing the friction discs upon each other.



Another type ignited by striking a plunger.

In order to make all life-boats theoretically unsinkable it is required that all life-boats shall have air-tight tanks of sufficient capacity to float the boats when they are full of water and when loaded to the limit of their capacity. In the case of all vessels under American jurisdiction the officials are required to test these tanks when the boat is installed and at least once a year afterward. The Federal regulations also prescribe various items of working equipment such as oars, a bucket, lantern, etc., which must be carried by every life-boat. These requirements vary somewhat as between life-boats designed for ocean steamers and those for service on lakes and rivers. All life-boats included in the equipment of the larger ocean-going vessels must be stocked with food, this supply being kept, of course, in storage in the boats. The regulation menu for each life-boat consists of at least fifteen gallons of fresh water and 25 pounds of hard bread, but, if preferred, thirty rations or fifteen pounds of the U. S. Army Emergency Ration—a favorite form of concentrated food—may be substituted for the hard bread.

As has been intimated, the choice between wooden and metal life-boats is largely one of personal preference. One of the objections commonly urged against wooden boats is that from being so long out of water they are liable to become very dry, and unless attended to at regular intervals may be found to be leaky when placed in the water in an emergency. The metal boats, on the other hand, can be stored on deck indefinitely without danger that the seams will open. Set over against this argument is the one that in the event of any minor mishap it is much easier to make repairs to a wooden life-boat than to a metal one. There is not enough difference in price or in weight between the two classes of boats to influence selection very strongly. The cause for criticism, if there be any, is not so much that there is any deficiency in any of the boats that are properly rated as life-boats as that so many vessel owners have been willing to pin their faith to emergency craft that are not really life-boats at all, but merely open boats without any special construction or equipmen..



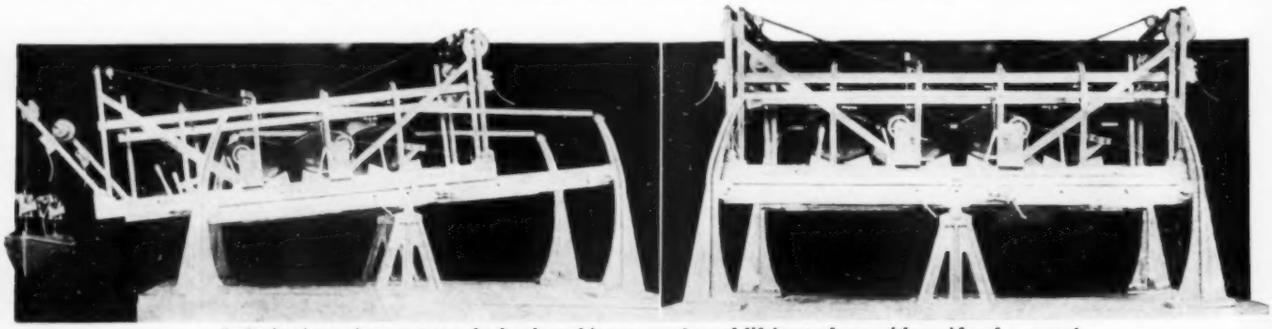
A lifeboat designed for motor cruisers by the Racine Boat Company.

The past few years have witnessed marked improvements in the facilities for launching life-boats from deck. It is one of the most stringent of the governmental regulations that all life-boats shall be fitted with such davits and gear as will enable the boats to be safely launched in less than two minutes from the time the clearing away of the boats is begun. While it is manifestly preferable that all life-boats be carried under substantial davits or cranes, in order that they may be lowered direct into the water, this is not always practicable, and in such cases it has always been accounted permissible to stow the extra boats near at hand. Not only may life-boats be launched with remarkable celerity, particularly where the quadrant davits are employed, but the automatic and mechanical devices which have been introduced in connection with modern davits go far to make such apparatus fool-proof or panic-proof and to insure the descent of a boat on an even keel with its full load aboard.

Rivaling the collapsible boat as a substitute for the regulation heavy life-boat is the life-raft. One advantage possessed by the life-rafts in common with the collapsible boats is that they may be stored in places which would not accommodate life-boats. In some respects the raft is as efficient a life-saver as the life-boat, although its occupants obviously cannot enjoy the same degree of comfort, a consideration to be taken into account when making provision for the safety of women and children. Life-rafts vary greatly in form and many patents have been granted for distinctive apparatus in this field. The most familiar forms of rafts consist of either a square wooden frame buoyed up by a cask at each corner, or else two oblong metal tanks or air chambers supporting between them a wooden platform or a rope netting.

The government regulations require that all life-raft cylinders, except those six feet or less in length, must be divided by water-tight bulkheads into not less than three compartments of equal lengths, and each of these compartments must be provided with a suitable air-pump connection. Life-rafts of the cylinder type range in length from four to fourteen feet and in width from three to ten feet. The smallest size raft is designed to accommodate only four persons and from that capacities range upward to a maximum of thirty-six persons.

While searchlights have long been regarded as almost indispensable by many navigators on inland waters, it required the Titanic disaster to emphasize that they have functions even in the open sea. That same disaster indicated that for all our reliance on the wireless there may yet be occasions when even the craft fitted for sending forth the "S. O. S." will have need of rockets and signal fire. In this connection it is interesting to observe that the thoroughly cautious mariner includes in the



A device brought out recently for launching a number of lifeboats from either side of a vessel.

equipment of every life-boat a distress signal which may be fired by a friction device. The red Coston hand light which emits a brilliant red flame has long had an established place in marine practice, and the same may be said of the rockets, the significance of which to the nautical observer is indicated by the color of the fire.

For signaling by day, when circumstances permit, there are, of course, the signal flags of the International code and the waving arms of the semaphore, but obviously a vessel must be in fairly close proximity to other craft or to the shore in order to permit the transmission of messages by any such means. At night there is similarly available for comparatively close range communication the Adrois system, the electric torch for wig-wag work, and the "blinker" light. The ordinary searchlight, when fitted with the requisite shutter, is available for heliograph signaling, and even the commonplace megaphone and the handpower fog horn of the small craft are well entitled to place among those means of warning which are at the disposal of the twentieth century mariner.

The Broach method of launching a motor lifeboat from the deck of a vessel by means of a pivoted slide.

The Hopkins life preserver cushion is filled with a soft non-absorbent fibre.

One form of danger peculiar to the motor boat is the collection of gasoline vapor in the bilges. Several devices have been manufactured to keep the lower portions of the boat free from this gasoline vapor, one of which is made by the Aaron Automatic Bilge Pump Company of Providence, R. I. One of the great advantages of their pump lies in the fact that the pump is drawing just as long as the engine runs, and when it ceases to pump bilge water commences to pump air and consequently rids the boat of any free gasoline vapor, which always sinks the lowest part of the bilge. No belt or gear drives or shaft attachments are necessary, the entire work being done by the circulating water of the engine after it has cooled the cylinder.

Other forms of life-saving apparatus that might be mentioned are the various forms of fire extinguishers, the most important of which are those in the form of a liquid kept in a sealed pump always ready for use, requiring no attention whatsoever until entirely used up, and the form of chemical powder in the tube which vaporizes at a low temperature and is very effective on gasoline fires but perfectly harmless to flesh and fabric.

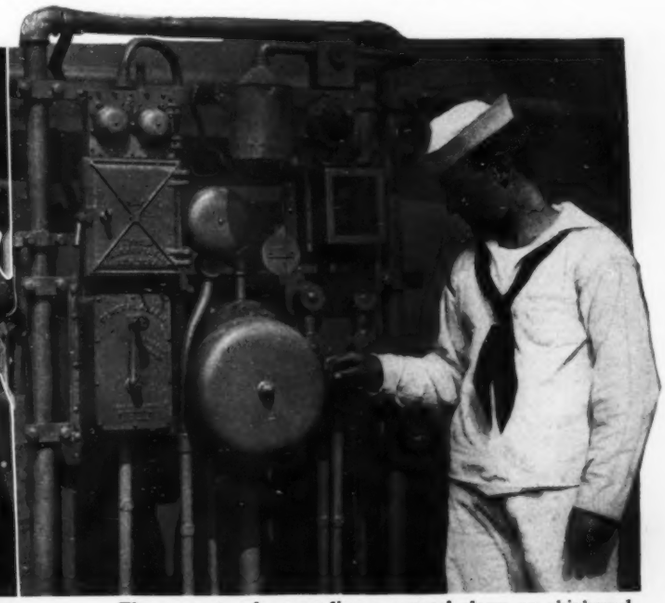
Where to stow the ordinary type of life-preservers on small motor boats, especially open boats, where they will be at hand in case of emergency and yet out of the way when not wanted, is a problem hard to solve. Anyone who has had experience in motor boating and has seen life-preservers knocking around the cockpit, on deck and in general everywhere under foot, piled in unsightly heaps on the forward or after deck or stuffed away in some damy locker or in the bilges, will appreciate what the solution of this problem means. The Wicker Craft Company of Newburgh, N. Y., have solved this problem very nicely with a special wicker chair, which differs very little from their stock product. The reed work underneath the seat of the chair is hinged in such a way that an opening can be made to receive the life-preserver.

Several of the prominent boat builders, notably the Atlantic Boat Co., the Racine Boat Company, and the Rippley Steel Boat Company, are turning out life-boats of from 12 to 18 feet in length, fitted with air chambers fore and aft and suitable to be carried on davits of a motor boat. These have a displacement of from 37 to 117 cubic feet, according to size, and are capable of carrying from four to fourteen people.

The large ocean liners have numerous protective utilities which at present are restricted in their application to these monsters of the sea, but which, let us hope, will one day become available in modified form for the use of the cruising motor boatman just as the wireless telegraph will. But even with these improvements the lifeboat, raft and buoy will always remain as a last resort.

Smack's life preserver was designed to keep the head out of water, which the common life-belt sometimes fails to do if improperly applied.

The method of closing the watertight compartments on battleships and liners.



The apparatus for sounding a general alarm on shipboard.

Making the Compass Tell the Truth.

How Motor Boatmen May Compensate Their Compasses with the Aid of Simple Apparatus. The Third of a Series of Articles on the Various Phases of Navigation.

By William C. Ward.

Probably none of the ordinary difficulties of the motor boat skipper is so little understood as the vagaries of the compass. Yet its seemingly erratic actions follow laws as simple and immutable as those of gravity. The compensation of compass errors is equally simple and several inexpensive outfits have been devised especially for the use of the motor boatman. In this article, the third of Mr. Ward's series on the various phases of navigation, he takes up the subject of compass corrections and treats it so thoroughly and so clearly that you should be able to adjust your own compass without the aid of an expert.—Editor.

IT is not too much to say that no vessel afloat, whether a ten-foot launch or ocean greyhound, actually steers the courses her compasses indicate. The error in either case may vary from a few degrees to several whole points of the compass, according to the way in which the distribution of neighboring iron affects the compass needles on any particular heading, and large deviations that render the compass quite useless are by no means confined to steel ships. If a compass is going to be used at all it must be made to tell the truth before it gets the boat into trouble, or it will prove a constant menace instead of a safeguard. Two small steel magnets and two blocks of soft iron properly fastened down in the neighborhood of the compass will make it give correct magnetic readings that can be trusted implicitly every time, and all the work of adjusting can be done in a couple of hours and at no expense beyond the trifling cost of the steel magnets.

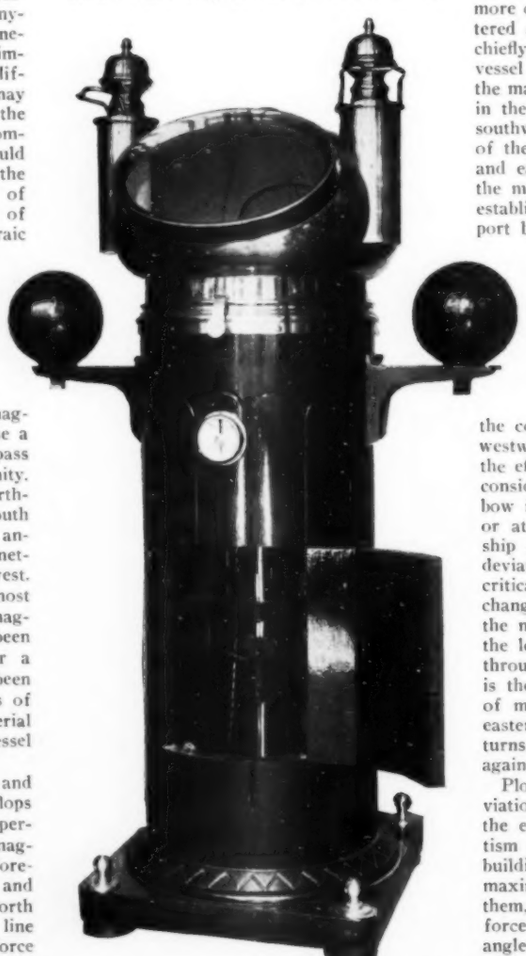
Although the mathematical theory of compass compensation is as complicated as anything else connected with terrestrial magnetism, the actual practice is ridiculously simple. The fact that compass errors are different for each heading of the vessel may seem a little perplexing at first, but if the errors on all thirty-two points of the compass were ascertained and recorded, it would be seen that there is a symmetry about the whole thing suggestive of the operation of some hard and fast law. As a matter of fact the observed deviations are the algebraic sums of the effects of two such laws, and in practice the two kinds of deviation are compensated seriatim, without taking the trouble to find out their amounts.

Any elongated piece of iron will become a magnet when placed in a north-and-south direction; not strong enough to attract bits of iron, it is true, but the magnetism induced in it by the earth's magnetic field is nevertheless sufficient to cause a sharp and wide deflection of any compass needle brought into the immediate vicinity. The north end of the iron will repel the north-seeking end of the needle and attract the south end, just as any other magnet acts upon another. If the bar is of soft iron, its magnetism will disappear when turned east-and-west, but if of hard iron or steel it will retain most of the magnetism imparted to it by the magnetic field of the earth, especially if it has been left in the north-and-south position for a considerable length of time and has been pounded or subjected to frequent changes of temperature, as is the case with the material that goes into the construction of a vessel while building.

Thus any ship that lay in a northerly and southerly direction while building develops permanent north polarity forward and permanent south polarity aft as a result of magnetic induction by the earth in the steel fore-and-aft members of the hull, machinery and fittings. So long as the vessel heads north or south its acquired magnetism acts in line with the direction in which the earth's force constrains the compass needle to lie north and south, and there is no deviation. In the first case, however, the north polarity forward tends to repel the north-seeking end of the compass, thus acting against the pull of the north magnetic pole of the earth, and weakening the directive power of the compass, making its movements very sluggish. In the second case the south polarity in the after part of the vessel adds its pulling power to that of the earth's north pole and the directive power of the compass needle toward magnetic north is considerably intensified; in other words the compass card has an abnormal tendency to swing back sharply toward north whenever it is disturbed, and its power to resist disturbing influences is considerably augmented.

There is an apparent ambiguity about this alliance between the north pole of the earth and the south polarity in the stern of the vessel to attract the north-seeking end of the compass needle, but as a matter of fact the north pole of the earth has south polarity and gets its name merely from the circumstance that it is the point on the horizon that is sought out by the north end of a magnetic needle. Bearing this in mind, the different actions of the needle become perfectly clear.

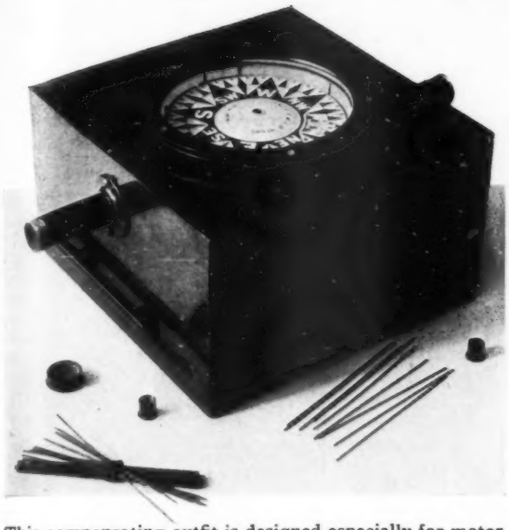
Now if this ship be headed northeast, the north polarity in the bow will drive the north end of the compass off to the left, to the westward of the magnetic north toward which it strives to point, and there will occur what is called a westerly deviation on this particular heading of the vessel; that is, the compass north is to the westward of magnetic north. Likewise, if the vessel be headed northwest, the north polarity in the bow will drive the north end of the needle off to the right of the direction it tends to assume, namely, magnetic north-and-south, and there will be an easterly deviation; that is, the compass north will lie to the eastward of the correct magnetic north, and instead of steering magnetic northwest the vessel will steer a course that will bring up somewhere to the right of her destination, and if this error is not ascertained and allowed for, or better still, compensated out in the first place, it will sooner or later get the ship into trouble.



Inside the standard binnacles of large yachts the rectangular compensators are placed in trays which can be raised or lowered on racks, and the heeling magnet is encased in a vertical brass sleeve.

To sum up the effects of the permanent, or more correctly, sub-permanent magnetism which is the resultant effect of all the different more or less permanent magnets that are scattered about every vessel afloat, whether built chiefly of steel or wood, take the case of a vessel built heading northeast, or nearly so, the magnetic properties of which are set forth in the diagram. When heading northeast or southwest, there will be no lateral deflection of the needle because the forces of the ship and earth will act in the same straight line, the magnetism induced while building having established a north pole somewhere on the port bow and a corresponding south pole on the starboard quarter. As the ship's head swings toward the east, this north polarity swings off to the right of the north-and-south line along which the needle tends to lie, and repels the north point of the compass off toward the westward. On the southeast heading, the north pole of the ship is still to the right of the north-and-south line, and the compass north continues deflected to the westward of its correct position. Heading south, the effect is the same, whether you choose to consider that the north polarity in the port bow is repelling the north end of the needle or attracting the south end. On southwest, ship and earth act in line, and there is no deviation; but as the vessel's head passes this critical point the character of the deviation changes. On southwest, west and northwest, the north polarity of the ship swings out to the left of the magnetic north-and-south line through the compass, and the compass north is therefore driven to the right or east side of magnetic north; that is, the deviation is easterly and will continue so as the vessel turns through north to northeast, where it again becomes zero.

Plotted from a straight line, easterly deviations to the right and westerly to the left, the errors due to the sub-permanent magnetism of this vessel would show zeros on the building heading and the reverse course, and maxima on the headings at right angles to them, because on these latter headings the force of the ship's magnetism acts at right angles to the normal direction of the needle, while on intermediate headings the force is applied obliqueiy, hence to less effect. Being easterly in one semicircle and westerly in the other, this kind of compass error is called semicircular deviation.



This compensating outfit is designed especially for motor boats and sells for $10.00 complete.

Semicircular deviations are also caused by all vertical soft iron, one end of which is on a level, or nearly so, with the compass card. Polarity of this kind is a practically fixed quantity within the limits that most vessels cruise, but it changes character completely every time the magnetic equator, or circle around the earth half-way between the magnetic poles, is crossed. Such deviations are caused by the vertical component of the earth's total force to north as follows: At the magnetic poles all the force is exerted downward, and the compass north would stay anywhere it happens to point. If the card were not buoyed by the liquid in the bowl the needle would pull the card right up-and-down. At the magnetic equator, on the other hand, all the earth's pull is horizontal; that is, in the horizontal plane, for the distance of the pole is so great that the dip of the needle is nothing. In middle latitudes, however, the needle tends to dip downward and point directly at the elevated pole, and the fact that the compass is so constructed that the card has to stay in the horizontal plane cannot prevent this tendency from existing. The higher the latitude, the stronger the tendency to dip and the more nearly vertical the pull of the pole; hence the stronger the magnetism induced by the vertical component of the earth's total force. As long as the vessel does not change her latitude materially deviations due to this cause in the ends of funnels, stanchions, boat-davits, etc., can be considered a fixed part of the total semicircular error and compensated along with it.

Horizontal soft iron, however, produces an error of altogether different character. While the semicircular deviation may have its zero points anywhere, that caused by transient magnetism induced in horizontal soft iron is always zero on the cardinal points, with maxima, alternately easterly and westerly, on the intercardinal headings; hence its name: quadrantal deviation. The predominant type of this class of iron found universally on shipboard takes the form of an equivalent continuous bar passing through the center of the compass, and will be considered first.

In the figure there would be no deviation on the north heading because the horizontal bar lies east and west and no magnetism is induced in it. For the same reason there could be no deviation while heading south. On east and west the induced magnetism is in the same straight line with the earth's force and the direction of the needle, so that there would be no lateral disturbance on those points.

But as the ship's head swings from cardinal to intercardinal points deviations appear. Between north and northeast the port end of the horizontal bar acquires north polarity which drives the compass north off to the eastward in an amount that increases up to northeast, after which, though the induced magnetism increases to a maximum on east, it acts more nearly in line with the natural direction of the needle and therefore causes a less deflection. Between east and southeast the port end of the bar draws ahead of the line of the needle and drives the compass north off to the westward, putting the deviation through the same changes, but with the opposite sign. Throughout the other two quadrants the cycle continues in the same manner.

But there is another type of horizontal soft iron that causes equal but opposite deviations to those set up by the continuous bar. A broken bar having half its length to starboard of the compass and the other half to port, sets up deviations according to the next diagram. Here it is the end of the short bar nearest the compass north that causes the deflection, but, as before, there is no effect on the cardinal points, for the bars either have no magnetism or act in line with the earth and needle. When heading northeast, however, the end of the port bar nearest the compass becomes a south pole and draws the compass north toward itself and to the westward of its natural position; when heading southeast, it again draws the compass north toward itself, but this time to the eastward; and so on throughout the rest of the points of the compass, causing in each case a quadrantal deviation opposite in name to that caused by the continuous bar.

This suggests the remedy for normal quadrantal deviation, and it is in fact compensated by just such an arrangement. Two iron balls, bars, or boxes of chain are fastened on arms extending from each side of the binnacle in the plane of the compass card and at such a distance from the needles that they will set up a negative quadrantal deviation that will exactly cancel the effect of the positive quadrantal deflecting system of the horizontal soft iron of the vessel.

The remedy for semicircular deviation also suggests itself: plant a permanent magnet, wrong end to, near the compass in the line between the permanent poles induced in the vessel, and in former days this was literally done. They used to have a little tray mounted in the hollow standard of the binnacle, fitted to carry several parallel steel magnets and to turn them to any desired angle with the fore-and-aft line of the ship. The tray could then be raised or lowered until the desired effect was obtained. For computing the angle at which the tray was to be set they had some very elaborate formulas which they used to work out on printed forms about two feet square ruled up for various additions, subtractions, etc., of the observed error on each point of the compass. The whole arrangement was enough to make a Napier dizzy, until somebody stirred the cobwebs of his school-day recollections and resurrected the parallelogram of forces. Since then the compensation of the compass has come within the reach of ordinary people.

The disturbance caused by the subpermanent magnetism of the vessel is considered as a force acting in the horizontal plane passing through the center of the compass and parallel to the axis of sub-permanent magnetism. This force is then considered resolved into two components, one acting fore-and-aft and the other acting athwartships, and the compensation of each is easy, since no angle is involved.

When the vessel is heading magnetic north, there is no quadrantal deviation; whatever error exists is attributable to semicircular deviation; and to pin it down more closely still, is caused by the thwartship component of the sub-permanent magnetism, since the fore-and-aft component is acting in line with the earth and compass needle, and can cause no deflection at all. Clearly the only difficulty is the problem of heading the vessel magnetic north, and there must be a digression here to cover this point.

In a great many harbors ranges are set up on shore, consisting of two fixed objects, which, when brought in line, bear magnetic north from the observer. At Delaware Breakwater, behind Cape Henlopen, there are several of these ranges, and the charts of the locality give full particulars about their appearance and meaning. The U. S. Atlantic Coast Pilot, Vol. 5, also has a good and more detailed description of this very useful arrangement. Having a range which bears magnetic north, there is nothing to do but bring it "on" and steam right for it while the thwartship magnet is being placed. To head the vessel magnetic east, bring the range "on," bearing abeam on the port side. To head northeast magnetic, bring the range "on," bearing broad on the port bow, etc.

But to compensate a compass properly it is necessary to steam along on the correct magnetic heading for five minutes or so in order to give the compass time to steady down, and ranges that cannot be taken head-on are of no use. If there are no ranges, artificial or natural, that can be used head-on for at least two cardinal and two intercardinal points, some other method must be resorted to, and there are several that suggest themselves, the simplest of which calls for some auxiliary apparatus.

A pelorus or dumb compass comes in very handy for this work. It consists essentially of a steel plate graduated like a compass card and pivoted on a ring carrying a lubbers point, which ring is mounted on gimbals like a regular compass. Rotating about the center of the plate is a bar or alidade carrying a pair of sight-vanes. The alidade can be clamped to the plate, and the plate can be clamped to the ring. Having ascertained the position of the vessel approximately, get from the chart the bearing (correct magnetic) of some object on shore that is five or six miles away. Its bearing will not change materially while the ship moves through considerable distance in any direction. Now set the plate of the pelorus so that the lubbers point will touch the division of the scale on the plate which corresponds to the magnetic point of the compass toward which it is desired to head the vessel. Also set the alidade at the cor

The pelorus or dumb compass is very useful while maneuvering to find the compass error by bearings.

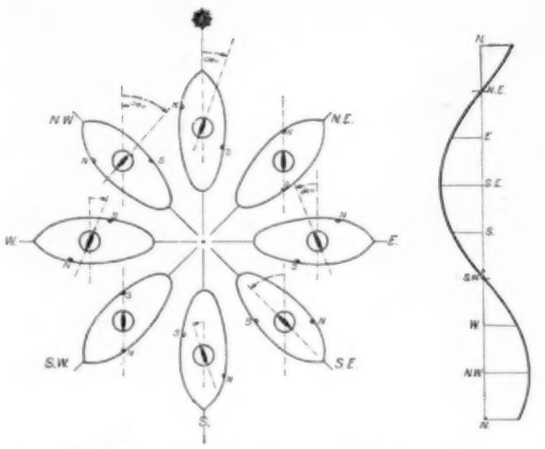
rect magnetic bearing of the distant object as gotten from the chart. This done, swing the vessel until the sight vanes cut the object, and steady the helm on this point while the compensating is being done, making sure from time to time by a peep over the sight vanes that the object is still "on."

If no pelorus or other similar instrument for obtaining the magnetic bearing of a distant object is at hand, it may be gotten at by the following method, which is exceedingly simple but consumes time. The boat should be headed on eight equidistant points of the compass and a bearing of the object taken on each of these compass headings. The bearings thus obtained will differ according to the change in deviation from one heading to another, but since all except the constant part of the error, which will be described later, is symmetrical, the mean of the different bearings will be a quantity in which the easterly and westerly errors have canceled each other, and may therefore be taken as the correct magnetic bearing.

With the vessel heading north magnetic, the thwartship component of the sub-permanent magnetism is compensated out by placing a thwartship magnet in the binnacle tray and moving it up or down in the binnacle until the ship heads north by compass as well as magnetic. Suppose the compass reads N. 18° E. when the range or sight vanes come "on." There are eighteen degrees westerly deviation here; that is, since the ship's head is magnetic north, the north end of the compass needles must lie that much to the left or westward in order that N. 18° E. by compass coincide with north magnetic. To compensate this, north polarity is needed on the port side of the midship line to drive the compass north off to the eastward where it belongs, so the thwartship magnet must be placed in the binnacle with its north end to port, and moved up toward or down away from the compass until the compass tells the truth; that is, reads north.

Now if the vessel be headed east magnetic by one of the methods just described, and deviation is noted, it will be due to the fore-and-aft component of the sub-permanent magnetism, since the thwartship component is already compensated, or even if it were not corected it could cause no deflection because it would be acting in line with the earth's force. Naturally a fore-and-aft magnet is the remedy, and it will be placed in the same manner as was the thwartship corrector. If the compass reads E. 30° S. when the pelorus sight vanes or the range points come "on," there are thirty degrees westerly deviation; the compass needle is off to the left of the magnetic north-and-south line, and the fore-and-aft magnet must be placed with its north end aft to drive the compass north abeam where it belongs.

The vessel should now be headed south and west to make sure that the compensation is correct. If the binnacle is not fitted with a tray for rectangular compensators, they may be fastened down on deck or anywhere near the compass: provided always that the magnets lie strictly fore-and-aft and athwartships, respectively, and that they are so placed that a perpendicular dropped to them from the center of the compass will bisect the magnet. This is to guard against a predominance in the effect of either pole, and it is such little mistakes as this that appear when the vessel is headed on the other two cardinal points for the final checking up.



The errors due to sub-permanent magnetism are easterly on one-half the headings and westerly on the others. They plot as a semi-circular curve.

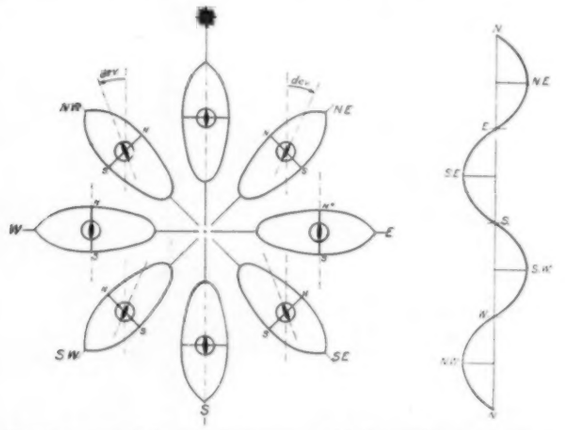
As stated before, the quadrantal deviation is compensated by placing two iron balls at the proper distance from the compass on the binnacle arms, and if the binnacle is not provided with such arms, it is important to place the spheres or bars exactly in the thwartship line or there will be set up new deviations that do not come strictly in either of the classes described, and which introduce new and unnecessary complications. In placing the spheres the vessel is headed on an intercardinal point and the correctors are simply moved in or out until the compass gives the correct magnetic reading.

When the vessel rolls or heels over, new forces come into play. The ends of vertical iron pieces that are directly under the compass while the ship is on an even keel, are now brought out to one side where they can exert a lateral pull, and the thwartship iron that heretofore figured in the quadrantal deviation acquires new disturbing properties by virtue of its inclination and the additional magnetism induced by the vertical component of the earth's total force. These things cause the compass to oscillate or swing from side to side until the man at the wheel doesn't know what course he is steering and the best he can do is to try to keep the lubbers point about half-way between the extreme swings of the compass.

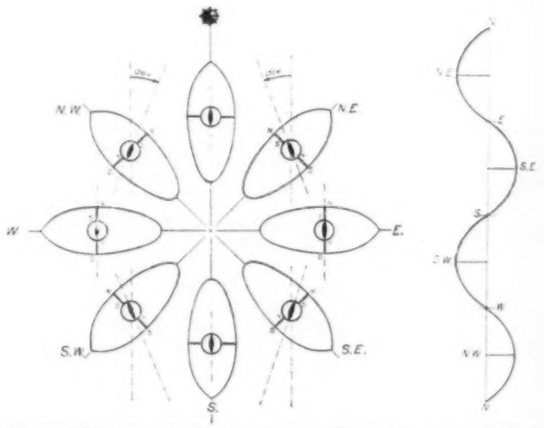
The compass wizards have some very elaborate formulas for this subject too, but the best way to compensate these errors is to take the vessel out in a seaway and let her wallow while the heeling magnet is being adjusted. The compensation consists simply of fixing a vertical magnet in the binnacle directly below the compass, and moving it up or down until the oscillations of the card cease. In north latitudes the north pole of the heeling corrector is always placed uppermost, for it has to counteract the effect of the upper ends of inclined elements, and these are always given south polarity by the vertical component of the earth's force in north latitudes.

Still another class of deviation is the "constant" error due to erratic iron; that is, to iron that is placed unsymmetrically with respect to the compass. Such errors are the same for every heading of the vessel, and for this reason make themselves apparent very readily in the rare cases where they occur. Very few vessels, however, have a real "constant," and in most cases the "constant" is more apparent than real. The most common source of such deviations is the setting up of the compass binnacle to one side or the other of the fore-and-aft midship line of the ship, which destroys at once the symmetry of arrangement of the iron. To see just how an unsymmetrical arrangement of iron would affect the compass, one of the turning diagrams which we have used to trace the effects of regular deviations can be constructed and followed out. Several cases have been reported in which vessels continually made landfalls to the right or left of their destinations, and which on this account were suspected of having a constant easterly or westerly deviation. Investigation showed that the keel was sprung, and in this way the "constant" effect was produced.

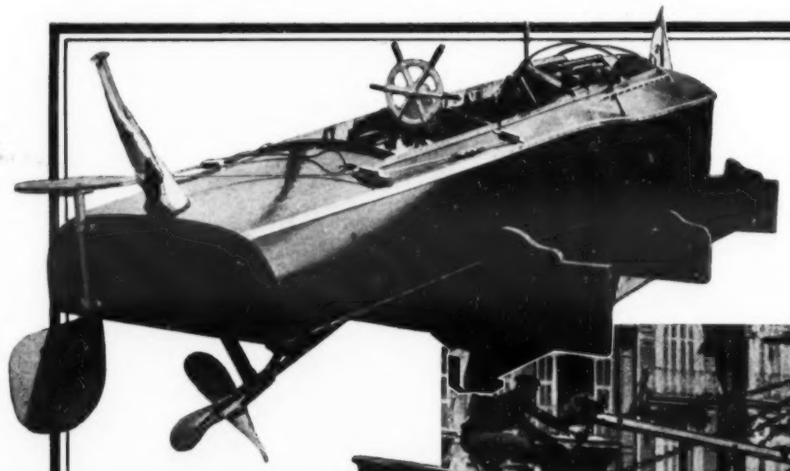
Nobody claims that a ship's compasses can be corrected absolutely. But errors can always be reduced to a couple of degrees, which is as near a given course as any human being can steer, and an infinitely greater refinement than is necessary as long as ocean currents remain as capricious as they are.



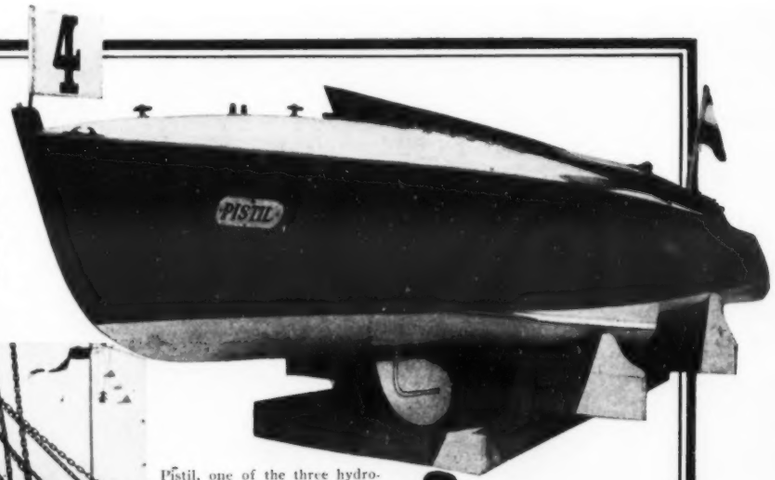
Continuous soft iron causes errors which are alternately easterly and westerly in the different quadrants.

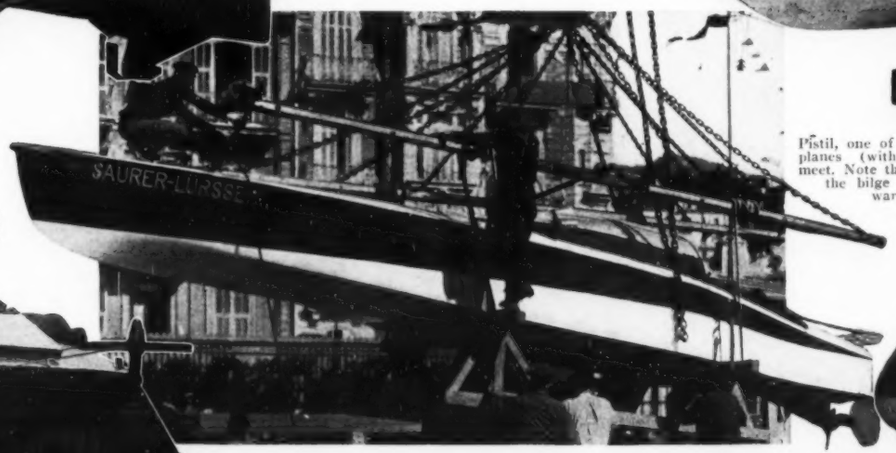


Non-continuous soft iron causes quadrantal error which is alternately westerly and easterly, and will cancel the deviations due to continuous soft iron.



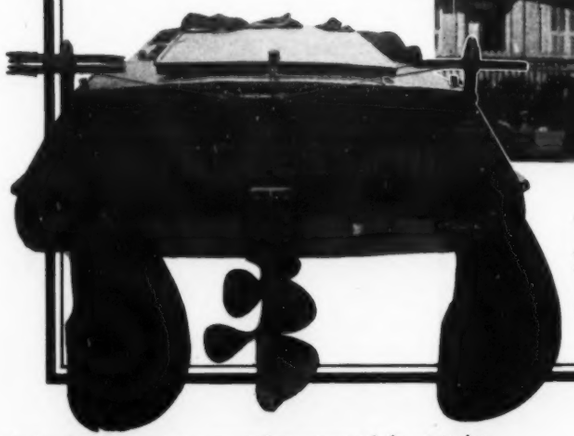
Saurer-Lürssen, below, proved to be the most spectacular performer at the meet. Although not officially a hydroplane, she would be classed as such, according to our conception of the term. The frontispiece shows her leaping clear of the water, and is one of the most spectacular photographs of a motor boat ever taken.





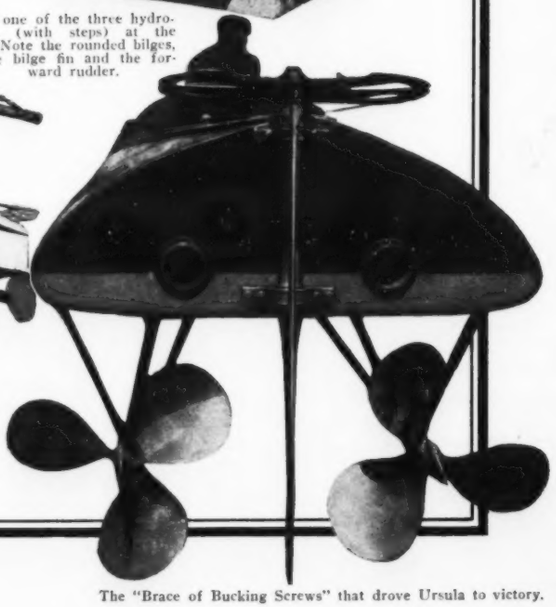
The "fiddle" type hydroplane, Sigma III. Note that the sides as well as the bottom are jogged.

Pistil, one of the three hydroplanes (with steps) at the meet. Note the rounded bilges, the bilge fin and the forward rudder.



Tyreless has her two screws mounted on separate shafts set tandem, a poor feature of her design.

How Some of the Monaco Favorites Looked Up Close.



The "Brace of Bucking Screws" that drove Ursula to victory.

IN THE GALLEY

Mr. Johnson, who has done so much good work for MoToR BoatinG and who was drowned recently at New Orleans, was one of those rare souls who successfully combined theory and practice. He designed boats and then tried them out and learned wherein his designs were good or bad. His own boat, the Sea Wolf, was a small cruiser and his suggestions on this type are particularly interesting to all who cruise in motor craft. The galley was one of his hobbies and we venture to say that this is the best article on the subject that has appeared.—Editor.

An Article on the "Cook Shop" and Its Arrangement, Written from the Inside.

By Herbert P. Johnson.

LET me ask you a question: Supposing the time's the late afternoon of a fine day in Summer, and you're loafing around on the dock. You make out a power boat, coming into harbor. She's about 30 feet top measure and some one tells you she's manned by three or four fellows who have been out to the island for three days. What will be the first thing the crew of that good ship will do after coming to anchor and straightening up a bit? What would you answer? My answer would be that they'd get into some decent clothes, row ashore and lay a straight course for the nearest hotel, or any old place where they sell good eatables, and stand by for a square meal.

Eight cases out of ten, my answer would be correct. And why? Simply because these fellows own an average power boat in which the necessary elements for the preparation of a real meal have been overlooked, or at least most shamefully slighted and since the boat is small the hired cook has been eliminated on account of the lack of space to accommodate him, or maybe the wherewithal with which to appease his majesty, which is also a consideration. No one of the crew has happened to serve his time as a chef, so has paid very little attention to the subject of concocting real eatables, and the fact has been very suddenly thrust upon them that there is all the difference in the world whether you sit inside or outside the cookshop door.

A crew can manage to exist on canned things, fancy little knicknacs and cold eats, but they don't thrive on them, and if they don't thrive physically, they're laying a foundation for all sorts of trouble. That a man views nearly everything that happens through his stomach is a long established axiom and there's no use trying to dodge the issue. You may drive him to the limit night and day in fair weather or foul, and wet, tired and worn to the core, he will stay on the job if he is well fed; but just dish him up at irregular intervals unpalatable, cold, makeshift stuff and call it a meal, and you don't have to have bad weather and a leak over your bunk to start a man-sized grouch that can grow some when it gets a good start. Half the mutinies on the high seas are directly traceable to this cause, and more than a small proportion of split partnerships in amateur manned ships can be accounted for in this way.

I am just mentioning this in passing and you can verify it any time by working your observers a little. With a poorly arranged galley and a cook who is not "on the job," the preparation of a meal is an undertaking of great magnitude. The cook, hampered at every turn, produces only indifferent results and since it seems to be ordained that the chef shall wash no dishes, he is very lavish in the way he uses up utensils, which naturally results in a kick from the fellow holding down the ancient and honorable post of dishwasher. He really has a kick coming, but it is generally not looked upon as important in the general turmoil, and under such conditions it is really not to be wondered at that the sign of a restaurant looks so good that the whole bunch are ready to fight a "white hope" to get to it.

Cooking and dish washing are just as important as good steering and engineering. A fair amount of horse sense must be applied to the job as well as any other, and if a fair share of thinking is devoted to it, there is no doubt that the results will be satisfactory to all hands in every case. I am only going to talk about the conditions in small boats, as the problem is hardest there, and nearer home. In big boats the owner can generally spare all the necessary room and hire a cook, so he really doesn't need to worry so much, although the same facts that apply to a small galley work in a large one and if we keep the cook contented, we are likely to be better fed than if he has to worry along under all sorts of disadvantages.

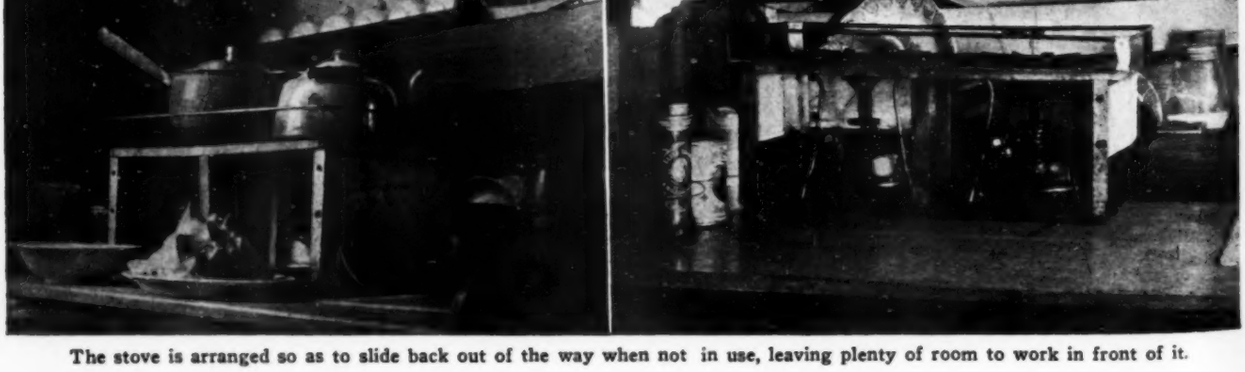
THE LOCATION.

In a small boat there is, to my mind, only one place for the galley and that is aft. Anyone who has been out of sight of land for a day or several days in a small craft, will answer the same way. Cooking must be done regularly and the weather conditions are anything but regular, so a galley that is seriously affected by the weather is simply out of the running. If it is placed forward, the motion of the boat is greater there than at any other point, which slings things around and makes the whole outfit hard to handle. It is almost impossible to obtain ventilation that you can notice with everything battened down, forward, when driving into a big head sea, but you can do so if the galley is aft, and has a hatch through the roof that can be opened without letting in spray.

A pair of doors leading to the cockpit will furnish a good supply of air under all conditions, and don't let anyone tell you there is such a thing as getting too much fresh air while you're holding down a cook's job—that hasn't been done yet. By locating the culinary department next the cockpit, the cooking smell is forced out of the cabin very quickly or never gets into it, which is very much more desirable than having a left over reminder of the last meal lingering around in your lockers and cushions. In most small boats all the dining is done in the cockpit, regardless of weather, as that is really the living space of the boat, and the fellow who lays out his boat with the galley forward, thinking that the main cabin would always be used as a dining saloon soon finds that his theory may be all right, but that it doesn't work out in practice.

The man at the wheel, although he has to keep his post while the others eat, likes to be near the scene of operations and somehow or other it doesn't seem to be the proper thing to leave him on deck where there is plenty of room and things going on all around, to settle down into a cabin which is more or less stuffy and bounded by the two sides and bulkheads. The amateur cook also likes to be aft with the crowd while he peels his potatoes or chops his onions, and then, too, it's very easy to chuck things overboard without going through the cabin.

Placing the galley aft generally means placing it in the engine room, which some will agree, is bad practice on account of having fire so near the motor. This, of course, is a problem worthy of consideration, and should be eliminated if possible, but the advantages of placing it here and the employment of proper precautions which should always be taken to prevent the fire's starting something, should outweigh the possible elements of danger.



The stove is arranged so as to slide back out of the way when not in use, leaving plenty of room to work in front of it.

THE ICE BOX QUESTION.

The space you are to allow your galley largely depends upon the ice box question. The refrigerator, to be worth the name, must take up quite a bunch of room and the problem resolves itself into this: Ice box or no ice box.

If we must have one, should it be inside or outside? The solution is not as easy as it looks. If you are running a private thirst parlor, which some yachtsmen seem to think must be the most important department of the ship, I have nothing to say—you need ice all the time, so have a big box. Far be it from me to pose as a temperance lecturer, but my idea of the game is that "booze" in large and regular quantities has no place in a small boat. If you have a ninety footer, a competent crew and a big quarter deck with a high railing and easy chairs, go as far as you like—go to it and then let the steward tuck you in your bunk.

If your boat is small, though, you've got to leave the drinking till you get ashore. Stay in fit condition to take care of the ship all the time and forget the "booze."

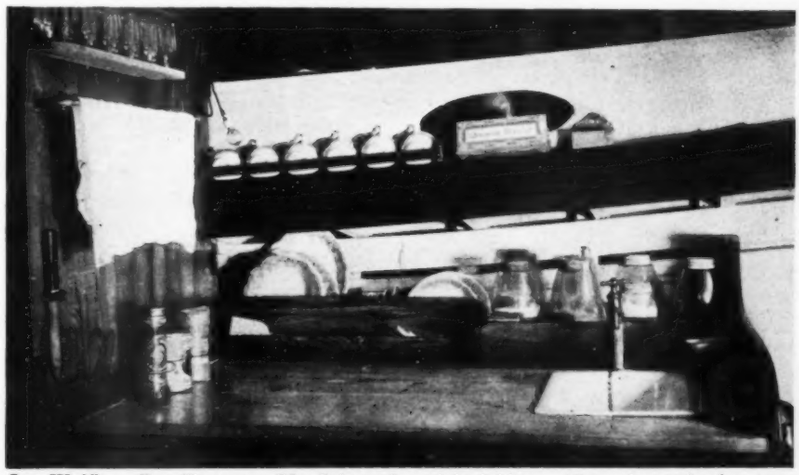
If you feel you cannot exist without all the comforts of home, ice water, frozen things and all that sort of thing, why then, you need an ice-box; but just picture yourself on a hot summer day chasing all around the town trying to buy ice after the purveyor of frigid water has already made his rounds and sold out. You chase around until you are cussing mad, then have to drag it down the dock, nearly smash the bottom out of the dink, and slop up the whole ship before you get it stowed. Is it worth it?

My personal opinion is that it is not. The only excuse for ice is to keep the butter hard and I have worked out a stunt which I will tell you of, which has kept this commodity in perfect condition while the thermometer stood above 95° in the cabin every day. It isn't patented, so if it looks good you go as far as you like. The whole scheme is this—The butter is placed in the small can, which may be any size, preferably about 4½ inches diameter and 8 inches high. Around the can is stretched a lamp wick such as are used in oil stoves. This goes down to the bottom of the can and nearly to the top. This whole outfit sets in a shallow can which is filled with water, the top, fitting snugly around the inner can, serving to keep the water from slopping out. The lamp wick takes up the water from the bottom pan and carries it up while the surrounding air working on the surface of the wick evaporates the water and consequently lowers the temperature inside the can. Of course, if the outfit is placed where there is a current of air constantly blowing over it the efficiency will be greater than if placed in a closed locker. Any tinsmith can make this for you quite cheaply and I will guarantee the results.

If you decide you must have the box, it must be large enough to hold a sufficient quantity, so that it need not be filled every time you turn around. In a good box, if the ice is not chipped away and used only to chill the box, 250 pounds should last a week with the thermometer in the eighties. Less than this is hardly worth carrying.

Shall the refrigerator be inside or outside? If the box is built in, it is expensive. The construction is difficult and the amount of space necessary for a sensibly sized box inside the boat is considerable, and often in order to economize in floor space they are built very high, carrying the heavy load of the ice well above the water line. Generally the first rot that starts on a boat is around this box, owing to the dampness and lack of ventilation, so if you are going to put it inside, these points must be considered. Carrying the ice into the boat makes a lot of slop and is not an enviable job but must be figured in if the game is worked this way. I have found the system of carrying an ice chest in the cockpit a most excellent one. These chests are very inexpensive if bought in stock sizes and hold plenty of ice without taking up much room. Drop leaves can be fitted to the sides of the chest and making it serve as a table.

In filling, none of the slop gets into the boat and it can be easily cleaned and thoroughly sunned, something that is most important and impossible with a box inside. When it is not in use, as in short trips, evening parties, etc., it is piled up ashore, and is not taking up a permanent place in the boat. My experience has been that the box stays ashore quite a good part of the time the boat is in commission, but the clothes locker or bunch of drawers which you can put in the space it would take up is working all the time.



Sea Wolf's galley illustrates Mr. Johnson's original ideas. Note the racks for cups, glasses, jars and plates and the folding holders to keep cans, bottle, etc., from sliding about while being used.

I am going to figure then, in laying out our galley that we are either going to eliminate the ice box or carry it in the cockpit.

LAYING OUT THE GALLEY.

Now for laying out the galley: We've decided that the only space we can use is at the aft end of the cabin and alongside the motor. We must have 18 inches floor space to move around in so that leaves us a space about two feet wide in a thirty footer of about 86" beam. It must be 5 ft. long from bulkhead to bulkhead.

You can't put your stove on one side the shop and dishes and sink, or provisions on the other. It simply won't work out in practice—the whole outfit must be in one line. The sink should not be less than 12"x16" and 12"x18" is much better, set about 3 inches from the forward bulkhead. The space between the sink and stove should not be less than 18 inches, leaving 2 ft. for the stove, a two-burner one being about 22 inches long, which allows a few inches clearance from the aft bulkhead. If you can so arrange it, have two companionways, one on each side, so that you can stand in the opening while cooking and get plenty of air. A hatch over the stove will serve but is not as good as a companion for through it the things can be passed into the cockpit.

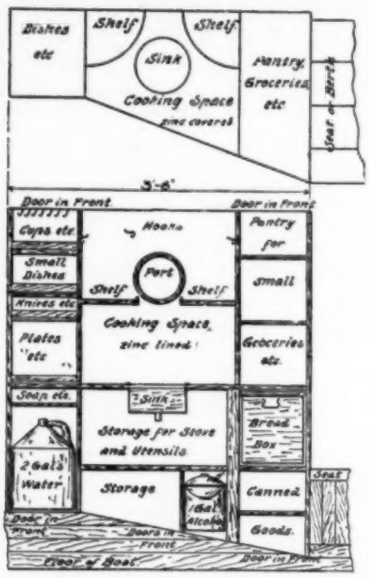
The sink should be of the white enameled iron type, as that is by far the easiest to keep clean and it should be set so that the rim is flush with or slightly below the top of the woodwork so that nothing can collect around the edges. The drain pipe should be of lead not less than 1 inch in diameter and leading overboard with as easy a bend as possible. It should go through the planking just an inch or so above the waterline, where the copper paint is carried up. This is important, for if the outlet is below the water line, small particles of stuff such as rice, corn or particles of vegetables, which are impossible to keep out of the drain, will fall to the water level in the pipe, and float there. Some grease comes along and sticks and soon you have a clogged pipe to open up.

If you are laying out a new boat, see that the water tank is placed so that you will get a gravity flow to the sink. This can easily be accomplished by placing the tank forward, where it can be raised high enough to furnish a good lead even with the tank nearly empty. Pumping the water or keeping an air pressure on a tank so that it will flow is a nuisance all the time. In putting in the water tank don't make the mistake of having it too small. Roughly, you will use a gallon per person per day, so that if you have four in the crew a 30-gallon tank will be sufficient to last a week; if you are reasonably careful with the water a 50-gallon tank is none too large, as it will save frequent replenishing and worry whether the supply will hold out or not. The sink should be set with its front edge as near to the woodwork as possible, so as to leave space behind it for the provision jar racks.

These racks are simply box-like subdivisions for holding screw-top, fruit jars. These jars are airtight, easily cleaned and, in fact, are ideal containers for such things as rice, sugar, coffee, flour, salt, etc. There should be six half-gallon jars and five quarts which will take care of all you need, one of the smaller ones being allowed for matches, which should be protected from dampness and possible rats. The larger jars should be placed at the back, with the smaller ones in front of them and bunched so that they can be easily reached. The wall behind the stove should be clear and the stove placed about in the middle of the space, so as to allow room behind it to place pots to be kept warm and a little space in front of it to work in. The dish-racks should be box-like affairs, open at the top, placed above the jars. On large boats these dish-lockers are open at the top and have a slot cut in the front so that the dish may be placed in and removed by laying flat and carrying it down or up by grasping it on the edge with two fingers through the slot.

This is very satisfactory when one has a great many, say a dozen and a half or so pieces of each size, but on a small boat where there will be only about six of each piece this system takes up too much room.

Divide the lockers up into three or four spaces, as required, just large enough to hold the pieces you wish to put in them, making the width so that it just fits the largest piece. The dishes are stood on edge, say bunching the plates and soup plates, another holding the saucers and small dishes, and another holding the other pieces, trying to keep those nearly the same size together. In this manner dampness or steam cannot settle in them and you can pick out any piece without removing the others. Contrary to custom on big boats, cups should not be hung on hooks screwed into the ceiling or beams. Little boats often roll around



An amateur designed galley somewhat different from the one described by Mr. Johnson.

considerably when at anchor, and of all the things that get on your nerves at night when you're trying to sleep, the clink! clink! clink! of cups hung on hooks knocking together is the worst. If they are hung far enough apart they bump the ceiling and then you cuss and cuss and finally get out of your bunk and unhook the whole outfit and pile them in the sink. They should be stowed on a little shelf, rims to the wall, with a strip fastened across the front of the shelf about the height of the middle of the cups, so that they fit snugly between the strip and the wall.

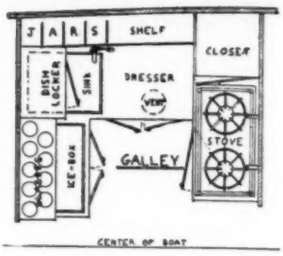
This keeps out the dirt and they can't rattle. The same applies to long spoons, kitchen knives, flapjack turners, etc., which are generally hung on the wall, so as to be handy. A small wooden cleat should be nailed to the wall and the spoon or knife slipped through the opening, jamming it against the wall.

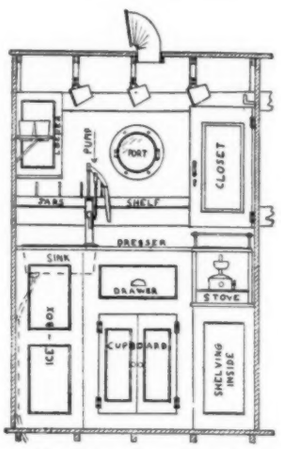
Glasses, in most cases, are stowed by slipping them through large holes cut in a narrow shelf. This is simple, but it is surprising how much dirt can accumulate in them when placed in this manner. A better plan is to arrange a narrow shelf, and above it another shelf with holes cut through it so that the glasses can be placed on the lower shelf, inverted, the bottoms engaged in the holes in the upper shelf to prevent their slipping around. A hole should be bored through the lower shelf in the center of each glass space, so that wet glasses will not slop the shelf up. The cutlery and silver had best be arranged all in one subdivision near the provision jars, where it can be easily gotten to.

The lockers under the working space, of course, are to be used for the stowage of pots and pans and provisions. Usually this space is provided with regulation doors and a floor and maybe a shelf inside. This gives a big locker but one in which everything gets mussed up and it's generally hard to find things. A much better plan is to divide this space up into drawers, the depths depending entirely upon the outfit you are going to carry. These drawers will be about 2 feet 3 inches wide.

The other drawers will be shallower and arranged with partitions that will just fit the regular-sized canned goods tins. By arranging them this way, you can always find what you want, and, in looking over the stock preparatory to ordering supplies, a glance will tell what's needed and save the trouble of straightening up a pile of mixed canned goods. These drawers will provide all the space necessary for canned things, potatoes, onions, etc., while a surplus stock of cans can always be stowed away under the berths when stocking up for very long trips. Make provisions in one of your pot drawers for a bread-box—you can buy these, made up of tin, especially for this purpose. Bread will keep fresh longer when closed up in a metal box and it has the advantage of being vermin-proof and easily taken out to give a good washing and sunning.

If the top of your work-space cannot be made of one piece of wood see that the joint is made perfectly tight, as should be the joint around the edges of the sink, so that every time you wash up the pots and provisions will not get wet. Covering this space with zinc makes a very sanitary top, but it is very slippery and if the boat is rolling the least bit things will go sliding all over the landscape.

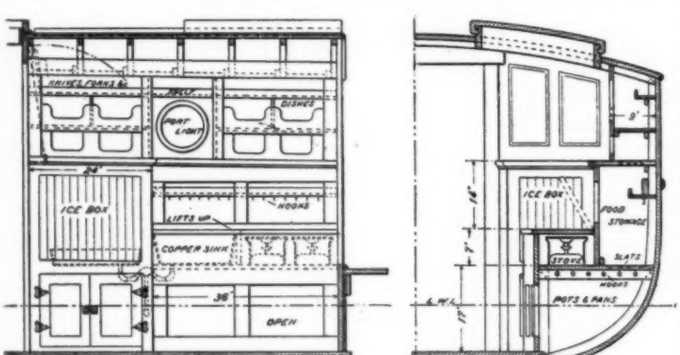




Another galley arrangement, suggested by a reader.

On the front edge of the provision jar racks arrange some wire-loop can holders for securing open cans from starting on excursions every once in a while. Very often you will have a can of milk, corn, jam or something that is partly used, which, if stowed in the drawer, will be likely to turn over and mess up everything or be forgotten. These cans had best be kept in sight. These open can-holders can be made in sizes to fit the various cans and are simply circular wire loops with an eye turned on each end, through which a staple is driven to hold it to the woodwork. When not in use, they hang flat against the wall and do not take up any space.

I have omitted the stove entirely from this article, as it is a subject in itself and will be treated fully in a later issue.



An excellent galley arrangement designed by a reader of MoToR BoatinG. Note the two-piece lid over the stove and sink so that no matter which of these is being used there is a table top beside it.

A Busy Season on the Chesapeake.

A Crowded Schedule of Racing Events and Cruises That Makes Most of Us Envious.

THE Chesapeake Bay yachtsmen have a busy week before them beginning June 27th, with races scheduled on six days by the Cambridge Yacht Club and the Maryland Motor Boat Club and those under the auspices of the Chesapeake Bay Yacht Racing Association. Already an even dozen of high-powered boats are entered in the 20-foot and 26-foot classes owned by such well-known enthusiasts as J. H. Ryan, T. C. Dupont, James Busic, James Waddel, White Brothers, P. V. Hoy, Breese & Breese, Charles Faulkner, A. I. Dupont, and Charles Mace. It is confidently expected that the world's record in these classes will be broken, as several of the above owners who had fast boats last year have even faster ones almost ready for the present season. Valuable trophies have been offered for each class by Alfred I. Dupont, to be known as the Atlantic Coast Championship.

The racing at Cambridge will be unique, inasmuch as it will take the hydroplanes out into open water and will thoroughly test the seagoing qualities of these small craft in their 74-mile race. Each night there will be a reception at the Cambridge Clubhouse and Governor Goldsborough, who is vice-commodore of the club, and is taking a keen interest in the regatta, will personally present the trophies to the winners.

On July 2nd the scene of the regatta will shift from Cambridge to Baltimore, all of the boats racing between the two cities. On July 4th Baltimorians will have their first opportunity of seeing hydroplanes racing and as there will be three events, one for 20-footers, one for 26-footers and a free-for-all class, there should be ample sport.

The annual cruise of the Chesapeake Bay Yach Racing Association will be held this year from July 20th to 29th, with races at Annapolis, Cambridge, Oxford and Baltimore. Since the formation of this association three years ago, there has been a decided increase in yachting, particularly in motor boating. All of the clubs report an increase in membership and in new yachts.

THE PRIZE CONTEST IN QUESTIONS AND ANSWERS

SELDOM have we been able to print a better set of answers than appear in this month's Contest Department. The material is really remarkable. Personally, we stand in awe and trembling whenever we come face to face with an electrical switchboard and we were a little in doubt as to what sort of answers this question would bring forth. It didn't bother the contributors, however, as there were three times as many as we could print. Look them over and remember that each one is a particular solution of some man's problem. In most cases the board has acutally been built and installed, and matter of this kind, based on actual experience, is of more value to the man who has similar problems to solve than any amount of advice from the best of text-books on electrical engineering.

THE mooring question is timely right now and, if you haven't already decided upon what kind is best for your boat and anchorage, the answers to this question should offer some good suggestions. The third set of answers on the toilet and its installation are good ones, too, and thoroughly explain this little discussed subject.

QUESTIONS FOR THE AUGUST CONTEST ARE THESE:

Give description and drawings for the construction of a floating boathouse to accommodate boats up to 30 ft. in length.

Suggested by Alton G. Cook, Petosky, Mich.

What is the best method of laying off an accurate race course?

Suggested by Wm. R. Gordon, Rochester, N. Y.

What do you consider the best method for remedying leaky cylinder compression?

Suggested by J. Tusler, St. Paul, Minn.

ANSWERS to these questions, addressed to the Editor of MoToR BoatinG, 381 Fourth Ave., New York, must be: (*a*) In our hands on or before June 25, (*b*) not over 500 words long, (*c*) written on one side of the paper only, (*d*) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.) Questions for the next contest should reach us on or before the 25th of June.

THE PRIZES ARE:

For each of the best answers to the questions above, *any* article advertised in MoToR BoatinG, of which the advertised price does not exceed $25, or a credit of $25 on *any article* advertised in MoToR BoatinG, which sells for more than that amount.

(*There are three prizes, one for each question, and a contestant need send in an answer to but one, if he does not care to answer all.*)

For each of the questions selected for use in the next contest, *any article* advertised in MoToR BoatinG, of which the advertised price does not exceed $5, or a credit of $5 on *any article* advertised in MoToR BoatinG, which sells for more than that amount.

For all non-prize-winning answers published we will pay space rates.

When You Send in Your Answers, state what you will take if you win a prize.

Making and Wiring a Switchboard.

A Necessary Part of the Equipment of the Modern Cruising Motor Boat With Its Elaborate Electrical System.

THE PRIZE CONTEST—Answers to the First Question in the April Issue.

WITH the installation of electric lighting by the combination generator and storage battery a switchboard has become a necessity on the smaller runabout as well as on the larger cabin cruiser. In designing this switchboard special attention has been paid to the individual parts so that stock interior house fixtures may be used, thereby making the switchboard cheap to build and easily assembled.

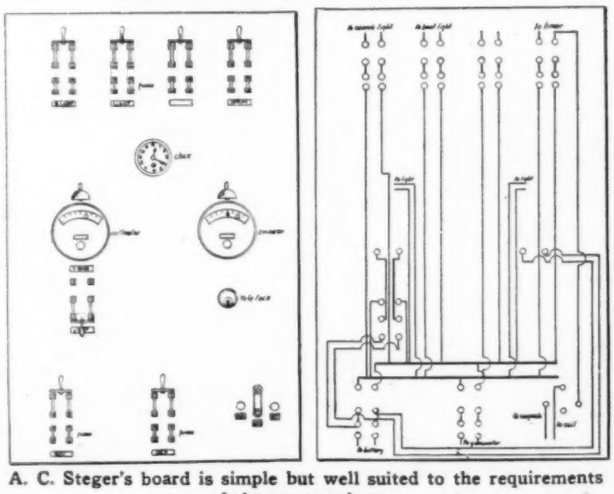
Simple and Adaptable to the Average Boat.

(Prize Won: Rochester Steerer and two Connecticut Plug Coils.)

DESCRIPTION.

The switch marked "Gen" throws the generator on the power busses. The switch marked "Bat" throws the storage battery on the power busses and is employed to charge the battery from the power busses while the generator is running, or to supply energy to the power busses when the generator switch is open. A double reading ammeter shows the rate of charge and discharge of the battery and the voltmeter in connection with the double-throw switch indicates the voltage of the generator or the battery. The switch at the lower right-hand corner of the board throws the ignition system from the power busses to the magneto. The four switches at the top of the board lead to the various lighting, ignition and appliance circuits that are employed.

A Yale lock is shown but is not included in the diagram of connections. This lock may be used to lock the ignition circuit against intruders, the circuit being so arranged that the ignition circuit is completed only when the bolt is in the locked position. A clock is shown and is convenient for keeping check on the ampere-hour discharge of the storage battery.



A. C. Steger's board is simple but well suited to the requirements of the average boat.

CONSTRUCTION.

The apparatus should be mounted on a piece of waterproof asbestos board, 20 x 30 inches. The switches and cartridge fuse holders are of the 10-ampere porcelain mounted type. They should be taken off the porcelain mounting and screwed directly to the board. The mountings from which they are taken may be used as a template for spacing the drill-holes. The ammeters to use are of the ordinary storage battery type.

All wiring should be done on the back of the board with No. 18 rubber-covered wire and the individual wires held in position with insulated rubber-covered staples. The busses should be made of No. 16 wire.

It is advisable to lead off all wires in a conduit pipe to some convenient distributing point.

The author has built this switchboard for a 25-foot runabout at a total cost of $10, and mounted it to starboard of the bulkhead on the side of the boat and its operation proved very satisfactory. ALFRED C. STEGER,

Washington, D. C.

An Excellent Board for the Larger Boats.

IN the design of a switchboard, the first question to be settled is the size of the system to be supplied. In this design we will consider that the switchboard is to be used on the average boat. We will assume that a 12-volt system is to be used, because any voltage below this is not of much value for lighting, and the average small boat does not carry an electric lighting generating at a higher potential.

Having selected the rating of the system, we will now consider what the demands will be on it, and how the switchboard will satisfy them. The following circuits should be provided:

(1) Two general interior lighting circuits.
(2) Signal lights.
(3) Searchlight.
(4) Two sources of engine ignition.
(5) Trouble light and electric fan circuit.

All of the above circuits are 12 volts, with the exception of the ignition circuits, which are 6 volts.

A volt and ammeter should be provided so that the conditions within the circuit shall be obtainable at all times. Since the polarity of the circuit changes when the battery is being charged or discharged, the ammeter must be of the double-throw type.

During the battery-charging period two general methods are in use for governing the current supplied to the battery. One is to regulate the output of the generator by some method of friction drive, and the other employs a field control rheostat on the switchboard. Following the practice of commercial power generation the field control appears to be the better method. This is indicated on the switchboard, but the value of the resistance to be used depends on the generator. Field control rheostats are usually supplied as part of the equipment of the generator.

A "low-voltage release" will be used to prevent the discharge of the battery through the generator at such times as the voltage of the generator falls below that of the battery. This should be of the positive type; that is, it should open the circuit between the battery and generator when the generated voltage falls, but should not automatically restore the connection when the voltage picks up. When the "low-voltage release" "goes out" the battery must automatically assume the lighting load. Self-restoring releases are very small and delicate and are therefore liable to derangement.

The lighting circuit should be divided into two parts, one port and one starboard circuit, so that in case one circuit is rendered ineffective the whole interior of the boat will not be in darkness.

Plugs should be provided at various points, and especially in the engine room, to which an emergency trouble light can be attached. These plugs will also supply current for electric fans. This circuit should be separate from the two lighting circuits so that any trouble on the main circuits will still leave the emergency circuit available.

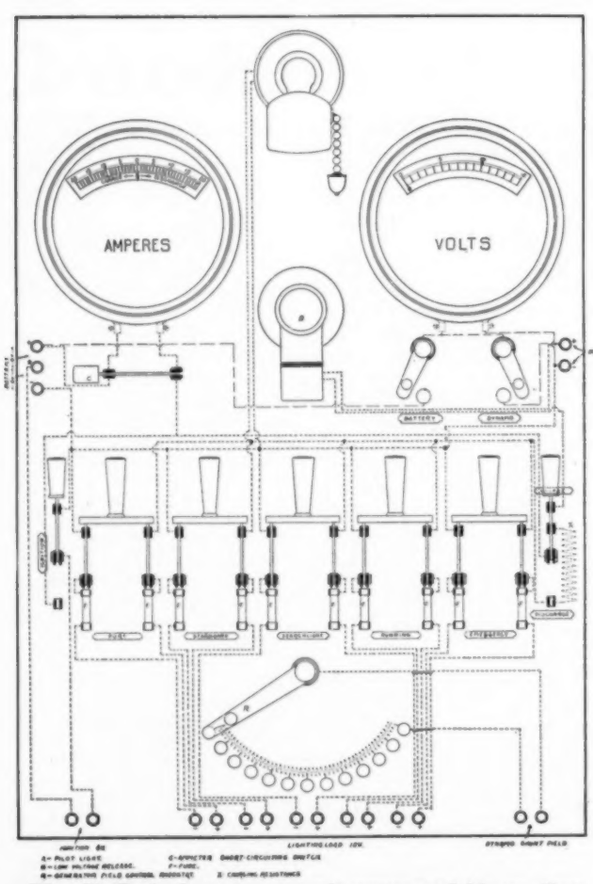
The search and signal lights should each be on separate circuits, for as each of these circuits lead to the deck, there is a possibility of their short-circuiting at the outlets, and if all lights were on one circuit the whole boat would be in darkness.

The switchboard should be of marble or slate. Weatherproof wire should be used and, to prevent too great a voltage-drop, the wire should not be smaller than No. 10, and all connections should be soldered. Double pole-knife switches should be used on each circuit and should be fused on both poles. The switches should open downward, as indicated in the drawing, and the blades should be on the dead side of the circuit. Enclosed fuses should be used, so that in event of a short circuit the molten metal will not fly. Only knife switches with spring contacts should be used and great care exercised at all times to keep these clean and bright.

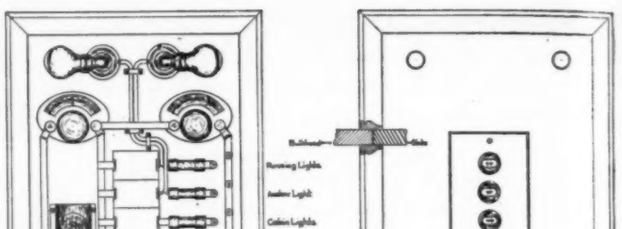
The ignition will be 6 volts to comply with standard coil requirements. Since the 12 volts are supplied from two storage batteries, an ignition is available from each, as shown.

Granting that the initial cost of this board is relatively high, it can be justified by the greater flexibility of control and reliability of operation.

Wm. H. Gref,
New York City.



Wm. H. Gref advocates a 12-volt system and his excellent design is more suitable for the larger boats.



F. M. Gascoigne's clever method of mounting his board in the bulkhead permits of its being operated from the cockpit.

Fits in Cabin Bulkhead.

THOSE that have cruised know the delights of groping and stumbling about among the closely-packed duffle of the small cruiser on a two weeks' cruise, trying to find the key to some small electric light. This evil was overcome in our case by controlling all lights from a central position, the cabin bulkhead. Here the switches are handy to the wheel and engine controls as well as the companionway. Inside, the board is directly over the engine with leads going down to the generator, battery and coils; and twin conductors for different circuits running across the bulkhead and under the deck to the various outlets.

The board is of black slate, 12" x 18" x 7/8", and provides for six circuits, as follows:

1. Running lights with telltale lamp.
2. Range or anchor light with telltale lamp.
3. Cabin lights.
4. Cockpit lights.
5. Searchlight.
6. Engine ignition switch.

These circuits are controlled by a flush plate gang of single-pole snap-switches. To make things waterproof, a thin rubber mat was placed between the switch plate and the slate and washers under the switch buttons. At one side of the switch body, inside, a row of cartridge fuse clips are mounted. The bolts for holding these, as well as all others carrying current, were made of terminals taken from old dry-cell carbons. A 3/16" hole was drilled 1/2" deep in the slate and a knurled nut on the end of a screw held in the hole while hot lead was poured around it. Slate is easily drilled with the regular twist-drill and can be cut with an old wood-saw or a hack-saw.

The bus-bars are 3/8" x 3/16" copper strip, with all joints soldered. The telltale lights are angle brackets with low voltage lamps placed in series with the circuits they represent. Under each light a 3/4" hole was drilled. This was enlarged to 1" outside for a depth of 1/4" and on the ledge this formed, a piece of plate-glass was cemented. In this way the telltales can be seen in either the cabin or cockpit and serve to light the switchboard and engine room.

Thompson meters permanently connected in circuit were used. Cheaper meters can be used but should not be left in circuit. The generator circuit-breaker is mounted under the ammeter. One of the line fuses is used as a main cut-out, it being easily removed or slipped into place. Another switch could be put in the gang for this purpose if desired, but should operate with a key rather than the regular button, and thus prevent outside meddling. These lock-switches are regular stock and are interchangeable with the regular snap-switch. Of course a central control does not prevent the lights being individually controlled as usual Larger gang switches may be used if any additional circuits are desired beside those mentioned above.

F. M. Gascoigne.

Recommends Slate.

THIS scheme of switchboard arrangement here presented was originally worked out for a 36-foot cruiser. It provides for the state room forward, the salon amidship, and the engine, galley and lavatory just aft.

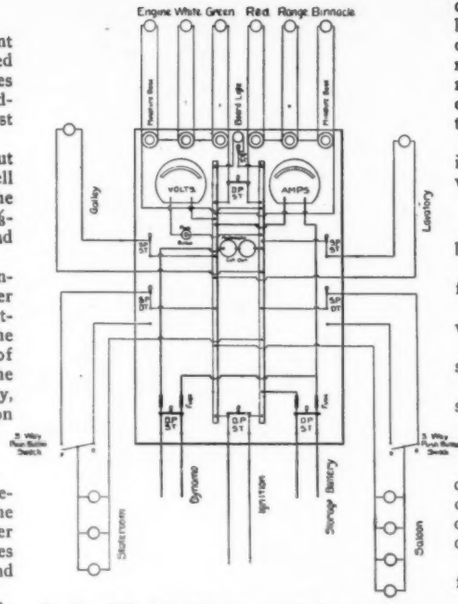
The switchboard is preferably of slate, but oak or mahogany will answer very well if well shellaced and kept away from dampness. The bus-bars are two pieces of ¾-inch brass, ⅛-inch thick, round-head machine screws and washers being used at connections.

The dynamo is direct current and is connected to the bus-bars through the ammeter and an automatic cut-out. The storage battery also connects through the ammeter to the bus-bars. With the particular arrangement of switches shown it is possible to use either the storage battery or the dynamo independently, or the battery may be connected to float on the line protected by the automatic cut-out, thus giving a flexible service.

By the use of single-pole, double-throw switches on the board connected to the three-way push-button switches in the cabins, the lights may be switched on or off from either point. The three-way push-button switches in the cabins will prove both ornamental and convenient.

The running lights are connected each in multiple with an extra socket at the top of the switchboard, thus when a light goes out the defective lamp may be located by screwing a lamp in the socket, which is in multiple with that lamp, thus avoiding the annoyance and delay necessary to test all the lamps on the circuit. If for any reason it is impracticable to replace the lamp it is possible to keep the good lights burning by leaving the test lamp in the socket at the switchboard.

T. L. D., Seattle, Wash.



T. L. D.'s board was worked out for a 36-footer.

Back Should Be Accessible.

SWITHBOARDS are generally made of marble, slate or hard wood. The best material for use in a motor boat would be slate, as wood is apt to absorb moisture, which is always prevalent about a boat, and marble is far more expensive. The size of the board will depend on the number of switches and instruments for which space is required, while the thickness may be from five-eighths to seven-eighths of an inch.

Before securing the slate for the board, select all of the switches and instruments needed, group them symmetrically as to appearance, and in such a way as to make the wiring convenient and systematic, and you will then be able to judge of the most suitable dimensions. The switches to be used should be small in size, but of substantial construction. The instruments should be the best you can afford, and they, as well as the switches, should be adapted for switchboard work; that is, provided with lugs which will pass through the board, serving for fastening as well as for connecting to the wiring back of the board. Switches of this character are made by the manufacturers and may be obtained through any electrical supply house.

After your slate has been secured, mark off accurately all holes to be drilled. Do not attempt to do the drilling by hand. Take the board to some place equipped with a power drill, where the work can be done quicker and far better.

The board should be installed at a point convenient for the man who is to operate it, but preferably as near as possible to the engine. It should be mounted, if possible, on a partition or bulkhead, so that the reverse side will be accessible for examination or changes. If this is not practicable the board should be fitted into a wooden frame, just as you would frame a picture, and mounted on hinges so that it can be swung out for convenient inspection.

The wiring should be done neatly and systematically, so that in case of trouble or if changes are desired, the different circuits can be easily traced. It will be well to draw a neat diagram of the wiring and connections and mount it somewhere near the switchboard for reference. This would be a great help to an experienced electrician and almost a necessity to the amateur.

When the board has been completed, give it a coat or two of very thin varnish to prevent the absorption of moisture.

KEY TO DIAGRAM.

No. 1—10 amp. cartridge fuse on storage battery feed.

No. 2—10 amp. cartridge fuse on dynamo feed.

No. 3—5 amp. single-pole knife switch for voltmeter.

No. 4—15 amp. double-pole knife switch on storage battery feed.

Nos. 5 and 6—5 amp. single-pole knife switches, controlling ammeter: No. 5 closed, No. 6 open, ammeter shows storage battery discharge current; No. 5 open, No. 6 closed, ammeter shows storage battery charging current from dynamo; Nos. 5 and 6 closed, ammeter short-circuited; Nos. 5 and 6 open, storage battery cut-out, load operating directly from dynamo.

No. 7—15 amp. single-pole switch on dynamo feed.

No. 8—5 amp. single-pole, double-throw knife switch on electric horn circuit, providing for operation from storage battery or dry batteries.

No. 9—5 amp. single-pole snap-switch on cabin lighting circuit.

No. 10—5 amp. single-pole snap-switch on engine room lighting circuit.

No. 11—5 amp. single-pole snap-switch on signal lights circuit.

No. 12—5 amp. single-pole snap-switch on searchlight circuit.

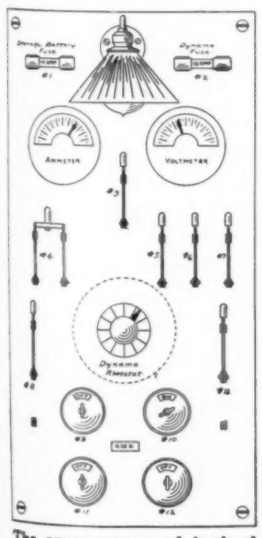
No. 13—5 amp. single-pole, double-throw knife switch on ignition circuit, providing for operation from storage battery or dry batteries. H. W. KORHAMMER, St. Louis, Mo.

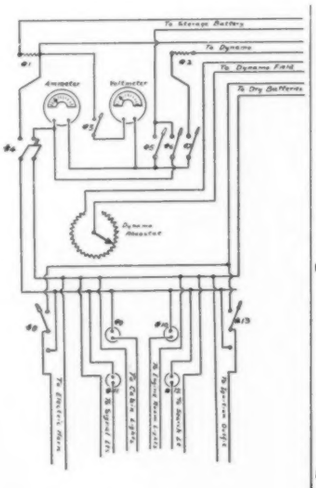
Hinged for Accessibility.

THE switchboard of a 40-foot glass cabin launch is shown here and the connection being clearly shown only a brief description is necessary:

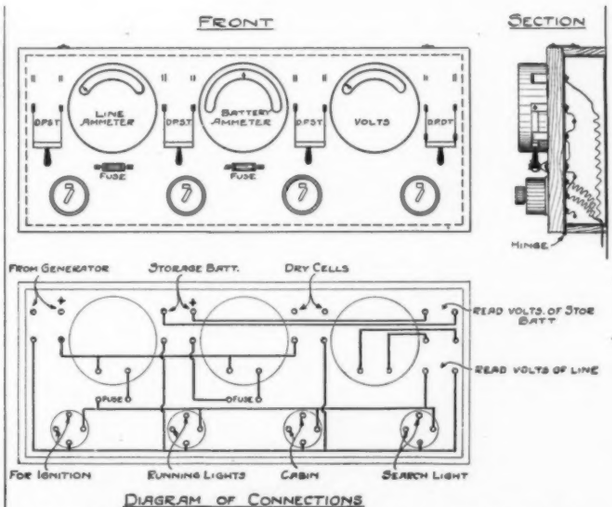
The boat's equipment consisted of a generator with automatic cut-out on it, so this was not put on the board; storage battery and dry battery carried for emergency only. They supplied ignition current for a 2-cylinder engine, running lamps, cabin illumination and a searchlight.

The board was made of 1-inch mahogany, thoroughly filled and shellaced, and provided with battens on the back to prevent warping.





The arrangement of both the fixtures and wiring suggested by H. W. Korhammer.



R. L. Kelley suggests hinging the board to make the wiring accessible.

This board formed the lid of a box. The sides of ½-inch mahogany fastened to the bulkhead. The lid was hinged at its lower side, allowing it to drop outward exposing the wiring in case of trouble. The entire inside was lined with ⅛-inch asbestos felt. All the wires entered the lower side of the box, all were marked where they were from and sufficient slack was left inside to allow the board to open.

Three unmounted doublepole baby-knife switches with single throw and one with double throw were required, also four double pole indicating snap switches controlling the various circuits, two fuses and holders, a standard voltmeter, a standard ammeter, and a special ammeter for the storage battery circuit with the needle normally in the center. Its reading either side of this indicates charge or discharge rate of storage battery. All connections on the back were made of No. 8 B. & S. wire, all joints soldered and carefully taped and the wires held by porcelain cleats screwed to board.

By this arrangement: (1) Battery and line voltage can be read by changing switch on right. (2) Charge and discharge rate of storage battery is always shown. (3) No live wires exist in any of the circuits when snap switches are open, as in other systems which use single-pole switches. (4) Fuse protection. (5) Easy of access in case of trouble.

It will be seen by the connection that this is arranged to run either as a floating battery or charge and discharge of the battery at will of operator.

For wiring from the switchboard the following safe carrying capacity of wires will aid in selecting the proper size: 12 amp. for No. 14 B. & S.—no smaller size should be used—17 amp. for No. 12 B. & S., 24 amp. for No. 10 B. & S., and 33 amp. for No. 8 B. & S.

L. R. Kelley, Philadelphia, Pa.

Moorings for Motor Boats.

The Various Kinds of Practical Moorings and How They Should be Rigged to Obtain the Best Results Under Various Conditions.

THE PRIZE CONTEST—Answers to the Second Question in the April Issue.

Mushroom Anchor Best.

(*Prize Won: A Canoe.*)

SINCE a soft bottom forms the best anchorage, the old hand will always pick out a mud bottom where possible to do so, when putting down a permanent mooring. Moorings can and often are, "planted" in all kinds of bottoms, but the holding power of any given anchor will be very much less in a sand or hard bottom. A soft bottom will allow the anchor to bury itself well below the surface, when the suction of the mud increases its holding power a hundred fold.

For the average bottom the mushroom anchor is the ideal, as its deep saucer-shaped rim will work well down into the mud. If the mushroom is made with bulb shank, its weight and efficiency is further increased; the weight of bulb keeping down the shank, which has a tendency to ride up under the pull of the cable.

A large flat stone, drilled, and fitted with an eyebolt, also makes a first-rate mooring anchor, and an old car wheel is also good. Another satisfactory mooring may be made of cement in this fashion: Fill a box of suitable size with scrap-iron and cement, in which embed two heavy eyebolts with forged washers at both ends. To these eyebolts a chain bridle can be shackled. A mooring of this kind is cheaply and quickly made, and has this advantage, that it can be made of any weight desired.

To put out and take up a heavy mooring, two heavy flat-bottom row-boats will be needed. An old length of spar or a stout roller is placed athwartship the two boats, with side chocks on the gunwales to keep the roller from shifting about. In this roller (which should be about eight or nine feet long) several good-sized holes are bored, in which a crow-bar may be placed, forming the lever of our rough windlass. By heaving on the crow-bars two men can easily lift a heavy mooring off the bottom and row or pole it to the selected anchorage. For heavy moorings a couple of scows may be required.

For the mooring, the best cable is a heavy length of chain at the anchor end, and a stout rope leading thence to the buoy. The chain should be long enough to lift the end out of water at ebb-tide, that a new rope can be spliced in when needed. Mooring chains need not be galvanized, as it is submerged at all times, and rusting proceeds so slowly that it need not be considered.

The best mooring, or pick-up, is one of solid cork with an iron rod running through the center, forming an eyebolt at one end and a shackle at the other. A floating spar, keg, can or canvas-covered cork can be used. If a can, be sure the rod runs from top to bottom. The type in which the eyestraps are riveted on, is too flimsy to be chosen. The cable leading from buoy to boat should be of best manila, and to facilitate tying up and casting off, the cable's end should be spliced into a large and heavy bronze mooring hook of the "security ring" type, which is easily snapped into the eyebolt of the buoy.

Capt. Joe, Middletown, Conn.

An Easily Constructed Mooring.

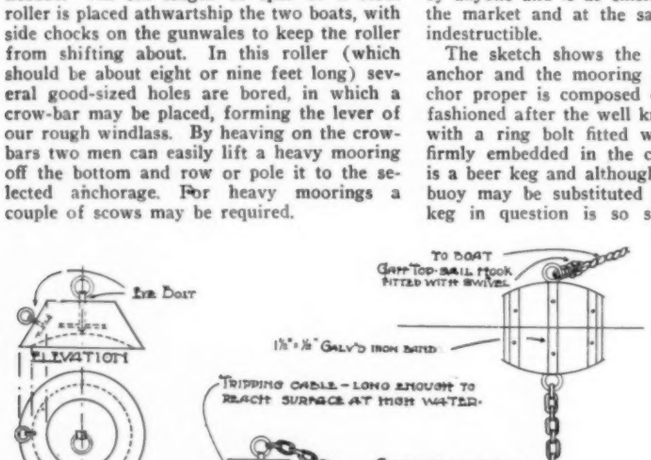
WHILE the selection of the best method of fitting up a mooring for a boat will vary to suit individual taste the one described herewith has several features which should appeal to many. First perhaps is the fact that it is easily constructed by anyone and is as efficient as any outfit on the market and at the same time practically indestructible.

The sketch shows the construction of the anchor and the mooring complete. The anchor proper is composed of a concrete block fashioned after the well known "bell" anchors with a ring bolt fitted with a large washer firmly embedded in the concrete. The buoy is a beer keg and although any other style of buoy may be substituted if desired, still the keg in question is so strongly constructed that it will stand the severest abuse without injury. In constructing the anchor first determine about what weight would be necessary to insure absolute immunity from dragging and as concrete weighs about 130 lbs. per cubic foot the size of the form is easily estimated. It is good policy to double the weight that is deemed sufficient so that no matter how it blows you can rest assured that the mooring will hold. For small boats an old dish pan makes an ideal form to hold the concrete till it sets and in cases where a larger form is necessary it may be constructed from any old lumber around the house. Use a good quality of cement and two parts of gritty sand to one of the cement. After the sand and cement have been thoroughly mixed add a quantity of fine stone (cut preferred), wetting it thoroughly before adding.

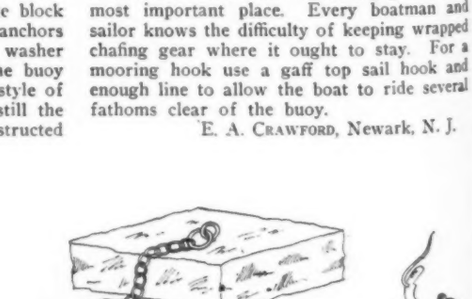
It will be noticed that the anchor has a second eyebolt fitted in the side with a chain running to the mooring chain and while this addition is not absolutely necessary it greatly facilitates the raising of the anchor when occasion demands. A smaller anchor (about 1/3 the weight of the other) is also shown in the drawing. This anchor acts as a spring in a heavy blow relieving the strain during a gale.

The cable should be galvanized chain whose breaking strain is many pounds greater than will ever be demanded of it and should be at least four times the depth of high water. From the buoy to the boat use a good piece of manila and if this mooring line is protected by a piece of old hose fastened at a point a little inside of the bow chock and extending outboard a sufficient distance to go beyond the stem it will be found to be the easiest and surest kind of chafing gear at the most important place. Every boatman and sailor knows the difficulty of keeping wrapped chafing gear where it ought to stay. For a mooring hook use a gaff top sail hook and enough line to allow the boat to ride several fathoms clear of the buoy.

E. A. Crawford, Newark, N. J.



The concrete block and keg mooring suggested by E. A. Crawford.



L. E. F. uses a granite block.

THE MOORING RECOMMENDED BY "KEDGE" FOR AN UNPROTECTED ANCHORAGE.

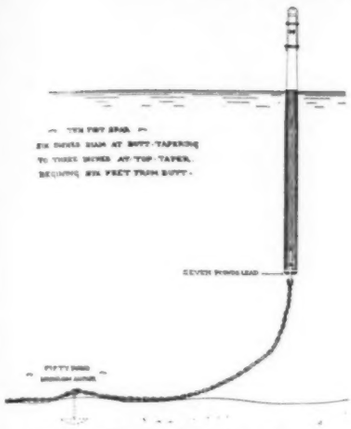


Fig. 1.—The 10-foot spar buoy.

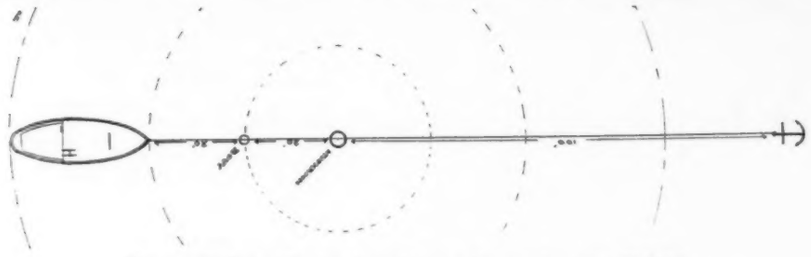


Fig. 2.—Under ordinary circumstances the mushroom will hold.

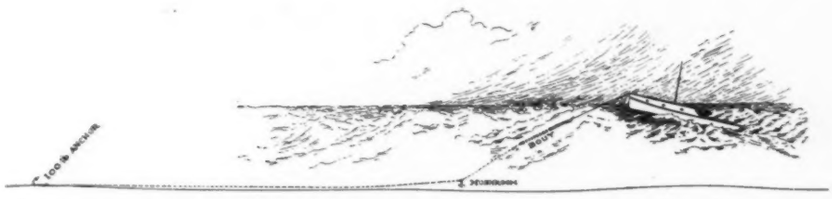


Fig. 3.—In a heavy gale the smaller anchor will probably be raised, but will act as a kellet to the larger anchor.

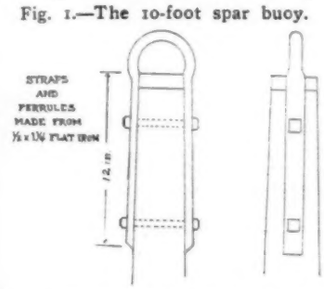


Fig. 4.—The strap for the top of the buoy.

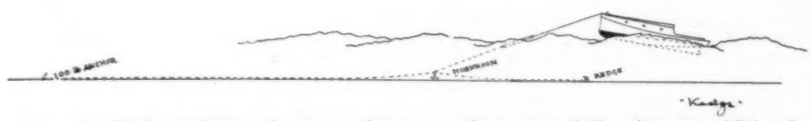


Fig. 3A.—If the anchorage is open to heavy seas from several directions an additional anchor may be used on the opposite side of the mushroom.

A Dependable Mooring.

BELOW will be found the description of a mooring which, for a number of years has given good service.

When the wind was raising high jinks and the fellows were hanging around on the clubhouse veranda, and wondering if their boat would be the next to pile up on the beach, there was no cause for anxiety on our part as to where our boat would be when it was over.

First, as granite was cheap in our locality, was a large block of granite, about two feet thick, with a hole drilled through the center, in which was placed a ring-bolt with a nut on the bottom. To this was attached a piece of half-inch chain, long enough to reach above the surface of the water at low-tide, so that a new rope, about one inch and a quarter in diameter, could be spliced into the ring on the end of chain, over a heavy galvanized iron thimble, each spring. On the other end of the rope was an eye-splice, over a similar thimble. The rope was about forty feet long when finished, and gave sufficient spring to take up the shock, when mooring straightened out from the boat jumping in the seas. The length of the mooring chain and line should be about three times the depth of the water. Made fast to the boat was about two fathoms of half-inch chain, on the outboard end of which was a gaff-topsail sheet hook, which, in making fast, was hooked into the eye on the rope. In picking up your mooring in a heavy sea you can haul it aboard and, taking a couple of turns of the pendant on the bitts, hook on your chain without any trouble, or chance of being pulled overboard; or if you have a large mooring log, as they do in some places, you can come up to it and hook the chain into the bail on end of log and make it fast

As there is no rope to chafe off at the bitts or chocks, you can feel quite sure, that blow high or blow low, that your boat will be there the next time you want her, provided your gear is heavy enough, and the one described above ought to hold a boat thirty-five to forty feet in length, unless, as sometimes happens, someone has borrowed her and forgotten to return.

For the benefit of those who may be new at the game, and do not know what a gaff-topsail sheet hook looks like, and to illustrate what I have tried to make clear in the text, I have made a couple of rough sketches to accompany it. In closing, will say that you can buy galvanized iron chain all made up with the hooks at a ship chandler's, or a marine hardware store.

L. E. F., Washington, D. C.

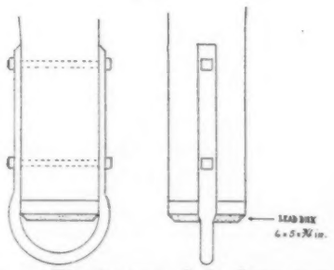


Fig. 5.—The bottom of the buoy may be weighted with a lead disk.

For an Unprotected Anchorage.

THE method described herein is not theoretical, but one that has been used under severe conditions for several years and given entire satisfaction. While it is adaptable to any size power boat in any ordinary depth of water, on hard or soft bottom; we will consider, for illustration, a 27 ft. cruiser anchored in about 13 ft. of water on an average bottom of mud and sand.

The outfit in this case will consist of a 10 ft. buoy, 120 ft. of 7/16 chain, a 50 lb. mushroom, and a 100 lb. fluke anchor.

The buoy is a white pine spar 10 ft. long, 6 in. diam. at butt and 3 in. diam. at top, the taper beginning six feet from butt. It is fitted with ferrules and straps made from ½ x 1¼ flat iron, fastened to buoy with ½ in. bolts as in Figs. 4 and 5. The buoy worked to shape will not cost more than $3, and the iron work made by a blacksmith is worth $2. A lead disk 6 in. diam. tapering to 5 in. and ¾ in. thick, weighing seven pounds, spiked to butt of buoy, as in Fig. 5, will ballast it in a vertical position so that when floating in 13 ft. of water and lifting 6 ft. of 7/16 chain about three feet of the buoy will project out of water.

In addition to its great convenience such a buoy has a still greater advantage in that when rigged in the following manner it acts as a spring lessening the strain on the cable very materially.

The buoy is fastened with 20 ft. of chain to the mushroom, which is fastened with a 100 ft. of chain to the 100 lb. anchor. The boat is made fast to the buoy with a 20 ft. rope, one inch or fifty-four thread, three strand, manila.

If, as is the case in most anchorages, the heaviest seas come from within three or four points of one direction the 100 lb. anchor is so placed that the chain will lead from that direction so that the boat may have the benefit of the entire 140 ft. of chain and rope when it is most needed.

In a heavy gale and high seas the mushroom will be raised from the bottom and acting as a spring will, in conjunction with the buoy, impart an elasticity to the cable which will not only ease the boat but will lessen the strain on the entire outfit to such a degree that it will hold securely at times when if rigged in the usual way the anchor would drag or the cable part.

Under ordinary conditions the mushroom will hold, and the boat will swing on about a forty-foot radius as in Fig. 2.

This method works equally well on a hard bottom, if a babbitt anchor is substituted for the mushroom.

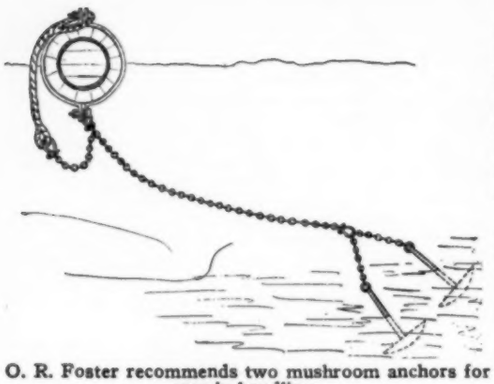
If the anchorage is open to heavy seas from several directions another fluke anchor may be placed on the opposite side of the mushroom or babbitt (Fig. 3a).

"KEDGE," New Haven, Conn.

Suggests Two Mushrooms.

THE sketch herewith shows a mooring suitable for a thirty-two-foot cabin cruiser. With the exception of the barrel strap, the entire mooring is made of parts kept in stock by dealers in marine hardware.

The material used is as follows: Two sixty-pound mushrooms, two connecting links, two



O. R. Foster recommends two mushroom anchors for ease in handling.

six-foot lengths of five-eighths-inch chain, three five-eighths shackles, a twelve-foot length of inch manila rope, two-inch thimbles and a fifty-gallon wine cask with iron straps. The straps should be of inch by three-eighths material and can be fitted to the barrel by a blacksmith; the bolt fastenings are best provided with checknuts. The length of the main chain must be governed, of course, by the depth of the water in which the mooring is placed.

This form of mooring possesses the following advantages: It is inexpensive; the weight of the chain acts as a riding weight; it is easy to pick up by a boat hook; when the boat is moored the barrel buoy is held away from the boat and therefore there can be no chafing; by having two mushrooms of sixty pounds weight the mooring is easily handled when on land, and when it is being put into place; it can be used on sand or mud bottom.

By increasing the size of the mushrooms and chain this type of mooring can be used for boats of large size.

O. R. FOSTER, Brooklyn, N. Y.

Strength First, Convenience Next.

WITHOUT entering into a lengthy discussion of the various methods that adapt themselves to various localities, let it be said that the best mooring for any motor boat is that one that will hold the particular boat for which it is designed, regardless. Strength should be considered first, convenience second. A cheap mooring is a poor investment, and it is a poor system of economics that prompts a man to scrimp on his mooring outfit, either in weight or quality. Put down a mooring that is just a bit stronger than you know is necessary and then you won't have to worry when your office windows rattle or a thunder shower comes up in the night.

Of the many mooring anchors in use to-day, the so-called mushroom is unquestionably the best. It combines both strength and convenience. A mushroom anchor weighing 300 pounds has the holding powers of a flat rock four or five times as heavy. At the same time it is comparatively easy to raise it, either for movement or inspection.

When the limits of the anchorage permit, use long scope. Security increases with scope. In congested anchorages where the scope must be limited, the anchor chain and cable should be of extra weight.

Galvanized iron chain, two-thirds the length of the scope and of generous weight, should be shackled to the anchor. The weight of the chain will keep the anchor in a holding position.

A mooring buoy, while not absolutely necessary, is advisable. Breaking as it does the direct line of pull, it absorbs a large part of the strain on the anchor. A plain cedar spar, eight inches in diameter, is cheap and durable, answering every requirement. The spar having a U-iron bolted to the lower end should be connected with the chain by a galvanized swivel.

The remaining third of the scope should consist of hemp cable spliced through a hole in the upper end of the spar. At the opposite end of the cable should also be a long eye-splice, to go over the mooring-cleat or bits of the boat. This "eye" should be large enough to slip on easily, but not so loose as to enable it to jump off should the boat pitch violently. The cable should be fitted with suitable chafing-gear where it comes in contact with the chocks or any other part of the boat.

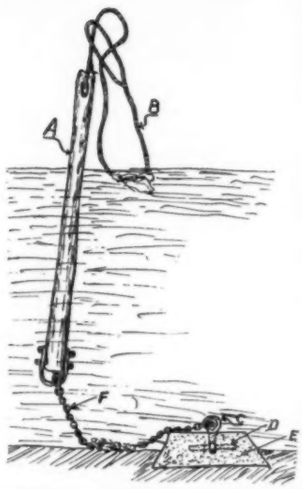
The float, which should be attached with a short piece of strong line to the "eye" of the cable, needs no particular discussion.

W. H. FOSTER, Wilmington, Del.

The Spar Mooring.

ANYONE who has ever tried to find the ordinary type of mooring buoy will appreciate the advantages of a spar mooring. It is also much more convenient and pleasant, especially from the high deck of the average cruiser, to lift the eye of the mooring line clean and dry from the top of the spar, than to haul it up wet and slimy from the water.

The sketch shows the general arrangement which, of course, must be made to suit the local conditions and size of boat. "A" is the spar which should be long and slender rather than short and thick. I have used cedar fence-posts with excellent results and they can be bought very cheaply. The post should be long enough to stand three or four feet out of water and extend two-thirds of the distance to the bottom at high-tide. The post should



W. G. Allen's simple but excellent mooring.

be smoothed up, puttied and painted white. The hole for mooring line should be at least six inches from the end, be countersunk on each side and made perfectly smooth. A slight groove across the top and down each side to fit the mooring line will keep it in position. The mooring line (B) can be of any length, about 25 feet will do for the average boat.

A heavy galvanized iron bail is bolted to the lower end of the spar. The bolts must go clear through, be well set up and riveted over.

The mooring may be one of the very convenient and efficient anchors advertised in Motor Boating, or an old car wheel, flat stone, etc. If a regular mooring anchor is not used, the holding power depends upon the weight which must be ample, and a concrete block (E) is easiest to make and handle. The concrete will weigh 130 lbs. to the cubic foot, so get a box of the right size, one wide and flat rather than narrow and deep, and line it with tar paper. Mix the concrete in the proportions of one part best Portland cement to three parts coarse sand. Mix sand and cement thoroughly before adding water, and make small batches rather than trying to do it all at once. The concrete should not be made thicker than paint when poured into the box. Pieces of iron, small, sharp stones, etc., may be put in if desired and will save some concrete, but keep them away from the surfaces of the block.

The mooring eye (C) should be made of heavy wrought-iron (ungalvanized), not less than one inch diameter, with an eye on the lower end through which a bar (D) can be passed and bedded in the concrete. The weight for a given boat should be three times that given for a mushroom anchor of corresponding size.

WM. GEO. ALLEN, Portland, Me.

Installing a Toilet.

The Most Suitable Devices for Use on the Motor Boat Where Space is Limited, and the Arrangement of the Outboard Connections.

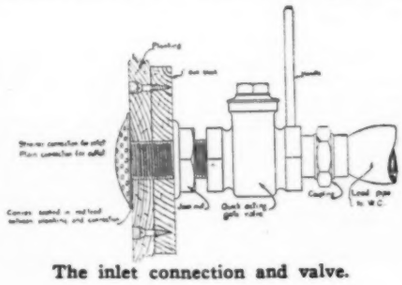
THE PRIZE CONTEST—Answer to the Third Question in the April Issue.

An Average Case.

(Prize Won: $25 worth of Marine Hardware from C. D. Durkee.)

THE simplest, most satisfactory toilet is that which will work successfully and yet not scare our greenhorn guests. That is, it should not have numerous turn or foot-valves. Those that have are all right when you are properly introduced to them.

The foot and hand-valves are safeguards against flooding your boat, but as no toilet is properly installed until it has sea-valves at the



The inlet connection and valve.

outboard connections, it is not necessary that they should be on the toilet.

Some toilets are made that have no hand or foot-valves, yet are automatic and proof against flooding. One of these we installed in our boat and have used two seasons, and have no complaint to make. All you have to do is pump and, when you go home, shut off the sea-valves.

This toilet has a single-barrel pump, 3 in. in diameter. On one side is fastened a smaller cylinder which takes care of the intake water and sends it to the bowl. The pump is fas-

tened on the discharge outlet with a leather valve at the connection; a little further out on the discharge tube there is placed another valve. The inner valve is for forcing and the outer valve to keep discharge from coming back.

The accompanying plan shows general set-up from outside appearance. To install, a comfortable location of about 2 ft. 9 in. wide by 3 ft. long is needed.

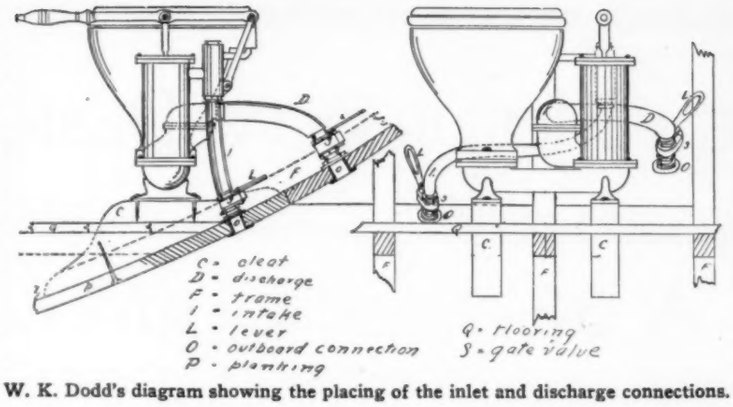
Build your floor level or put in two cleats for the stanchions to rest on. Select a place for the intake and discharge outlets, putting the intake forward and at least 18 in. away from the discharge. This is to prevent discharge from being sucked into intake outlet. It would be desirable to put the outlets on different sides of the keel for the same reason. Have the outlets in a handy place, so that you are able to swing the seacock levers.

Bore your holes (the larger one with an expansion bit) in the planking. Insert your outboard connection heads and screw up tight. The seagate valves are made to screw on the thread on the inside end of the outboard connections. Use white lead or some substance to make a tight connection in doing this. All that is left to do is to take the A No. 1 rubber hose that is furnished with the outfit and connect up the remaining distance, using the patented hose-clamps.

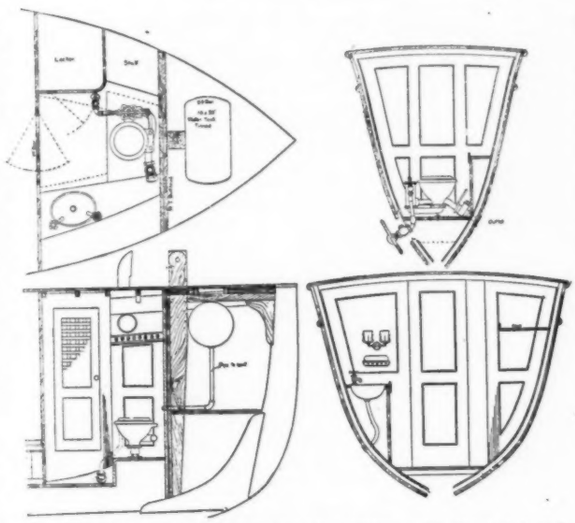
You can have a plumber put in lead pipe in place of hose, if preferred, and expense is no object. Some people take the precaution to use a long length of discharge pipe, pumping it into a large curve so that it goes above the level of the water outside in its course from pump to sea.

The leather valves may need renewing every year; ours have worked for two seasons and we expect to get another season out of them. The ones in my knockabout have been in use about seven seasons, and in taking them out I find them in better shape than I expected. The metal valve with which one make of toilet is equipped will, of course, last indefinitely.

WM. K. DODD, Montclair, N. J.



W. K. Dodd's diagram showing the placing of the inlet and discharge connections.



T. T. Y. recommends the forward position with the inlet and outlet on opposite sides of the boat.

The Enclosed Toilet.

AFTER being aboard a number of small (30-35 ft.) cruisers, the writer has concluded that the space in the bow is the most desirable location for the toilet. Here much otherwise unused space can be utilized and a bulkhead built about 8-10 feet aft of the bow, besides separating the toilet room from the rest of the cabin, will greatly increase the strength of the hull and deck.

If the toilet is placed along side of the engine, which is generally located at the widest part of the boat, and if made large enough for convenience will be occupying too much of the most valuable space in the boat which should be given up to some of the other requirements.

So much for the location; now for the equipment: A W. C. for use below the water-line will be required. A fixture for use above the water-line could be used, but would be rather inconvenient on account of the height to which it would have to be placed, to work satisfactorily. It is well to place the fixture on a low platform so that the seat will be about 17 inches above the floor. The inlet and outlet connections are shown on the drawing. If, for any reason, you do not wish to use lead pipe, hose, with suitable clamps, may be substituted. Place the outlet just below the water-line.

The lavatory may be of copper, nickel-plated or of enameled iron. The enameled kind is cheaper and easier to keep clean, especially if used in salt water. Lead the waste pipe out a little below the water-line. The pipe should be flanged on the outside and set in thick red lead.

A gravity supply of water is probably the most simple, so place the water tank higher than the faucets. Hot water may be had by pumping it through the jacket of the engine, but this is rather expensive and complicated for a small boat.

Lead pipe will be easiest to use, as it is difficult to fit iron pipe to the boat's shape, unless special fittings are used. Don't drink water that has long remained in the piping.

As hanging space is generally at a premium, a full-length hanging locker is very useful, while a couple of shelves will come in handy for odds and ends which are sure to collect. A lattice panel in the locker door will provide ventilation.

Many small artictles, as brush and comb-holder, towel rack, etc., will, while not absolutely necessary, come in very handy. Don't forget ventilation. Don't have any sharp corners to bump against. A double-acting hinge will allow the door to open inward when the berths are extended for sleeping.

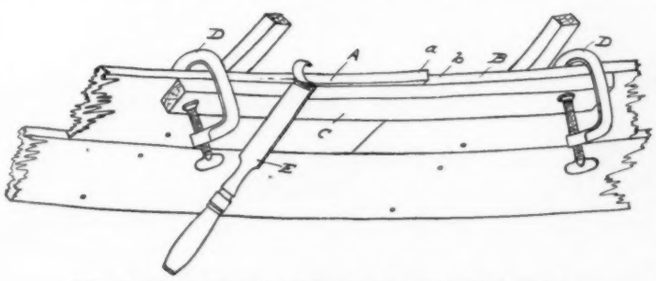
T. T. Y., Chicago, Ill.

A Planking Suggestion.

A Simple Method of Truing Up the Ends of the Plank Where the Joint is Irregular.

By Harrington Barker.

IT frequently happens that the amateur boat builder, when making a butt joint between two plank ends, finds that the planks are not of the same width at the joint. For instance, after the plank A, as shown in the accompanying sketch, has been fastened to the ribs, it is quite exasperating to discover that the end b, of the second plank, is narrower than the end a, of the first. A simple way out of this difficulty is shown herewith. The second plank B, is fastened into place, just as if the joint were a perfect one. A straight-edged piece C, at least as thick as the planking and preferably about 1½" thick and 2" wide, and 4 or 5 feet long, is then clamped to both planks, as shown at D, so that its upper edge on one side of the joint is flush with the edge of the "low" plank B. On the other side of the joint the straight-edge C, is allowed to extend sufficiently far to finally come up flush with the edge of the "high" plank A; and this distance should not be less than 3 feet, in order to give the straight-edge a smooth sweep across the joint. Then with a wide chisel E, resting flat on the piece C, as a guide, the "high" edge of the plank A, can be accurately shaved off in the manner shown.



The simple method of fairing up irregular plank ends.

The same scheme can be applied to the case where two planks, after being fastened into place, are found to show a "hump" at the joint. In such case, the straight-edge C, should be long enough to extend 3 feet or more along each plank, so as to start "fair" with the edge of each plank, and make a smooth sweep across the joint. Both planks can then be shaved off the same as is shown for the plank A.

NEW MOTOR BOAT DESIGNS

A 53-Foot Cruiser.

One of a New Design for the West Coast and British Columbia, Possessing Many of the Essentials of a Steamship.

THE accompanying plans show a 53-foot over all raised-deck cruiser, designed by Bowes & Mower, of Philadelphia, for Mr. G. Albert Hankey, of Vernon, British Columbia, for use on one of the large lakes in British Columbia.

The design is of special interest as it shows the overhanging steamship stern, and has the enclosed pilot house, which is considered essential by the yachtsmen of the West Coast.

The outboard profile shows a very pleasing proportions with a good sheer, and well-balanced deck houses. The stack serves for engine room ventilation, exhaust for the engine, and as an outlet for the galley stove-pipe. There is a steering station on the bridge with bridge controls for the engine, the wheel in the pilot house being intended for use in bad weather only. There is a 2-foot deck space on either side of the cabin trunk, and the after deck is 11 feet, 6 inches long, giving ample space for deck chairs. The bridge extends the full width of the boat, and there is 3 feet, 6 inches clear space between the pilot house and the bridge deck seat, which is 8 feet long, extending across the forward end of the cabin trunk.

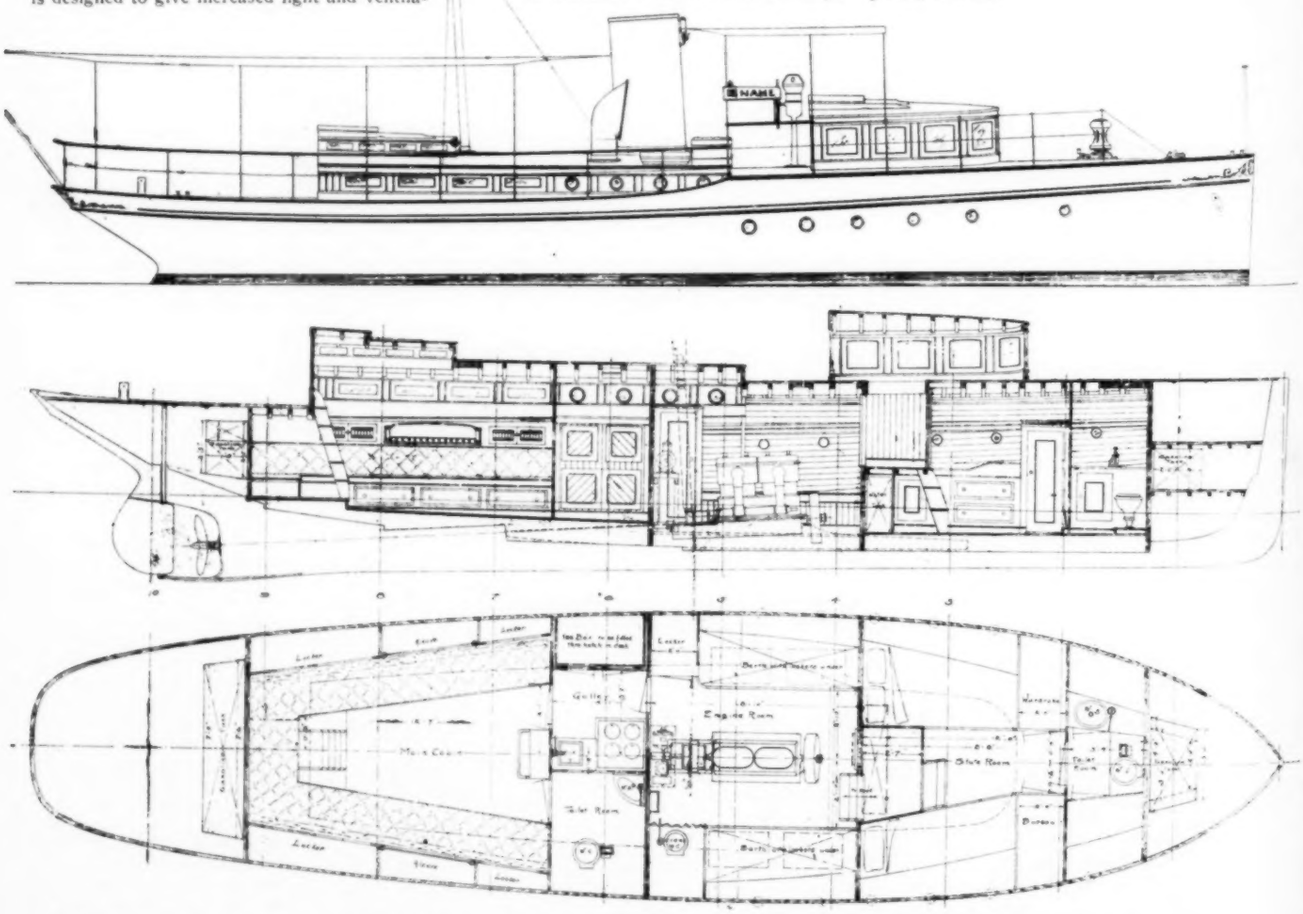
The main cabin is reached by the companionway leading from the after deck through a raised hatch on top of the cabin trunk which is designed to give increased light and ventilation to the cabin as well as to add to the outboard appearance. The main cabin is 12 feet, 6 inches long, and extends under the after deck 2 feet, 6 inches. There are transoms on either side, and at the forward end there is a space of 5 feet, 6 inches between transoms. Above and back of the transoms are lockers and alcove shelves for books. The transom is carried across the after end, making an additional sleeping space, and also a very convenient place for stowing bags, suit-cases, etc., when cruising. The space under the transoms is utilized for drawers. On the forward bulkhead there is a small sideboard with a door leading to the galley on the port side, and one into a toilet-room on the starboard side.

The galley measures 4 feet between bulkheads and is fitted with a large ice-chest, sink, dish-lockers, etc., and a Shipmate stove. From the galley a door leads into the engine room.

The toilet on the starboard side has a corner wash-basin with mirror over, and a Goblet Dolan water-closet fixture, with linen lockers back of it. Cowl ventilators are placed over both galley and toilet. The forward stateroom is reached by a short pair of steps from the pilot house and has a double berth on the port side, and a single berth on the starboard side. At the forward end there is a 2-foot clothes closet on the port side, and opposite it is a bureau of the same width with a large mirror over it. Forward of the stateroom is a toilet with a basin and water closet.

The engine room is amidships and is 8 feet, 10 inches long, with double soundproof watertight bulkheads at either end. The engine is a 4-cylinder, 6 by 8-inch Standard, developing 36 horsepower at 400 r.p.m. This will drive the boat at a speed of about 11½ statute miles per hour. There are berths on either side of the engine room, with a crew's toilet on the starboard side, and a clothes closet on the port side. The engine room is reached through a hatch in the top of the cabin trunk.

Her dimensions are: Length, over all, 53 feet; length, waterline, 48 feet, 3 inches; breadth, extreme, 12 feet; draught, extreme, 3 feet, 6 inches.



This Bowes & Mower cruiser, although but 53 feet in length, resembles a small steamship in her lines and arrangement.

A Fifty-Foot Cruiser for Southern Service.

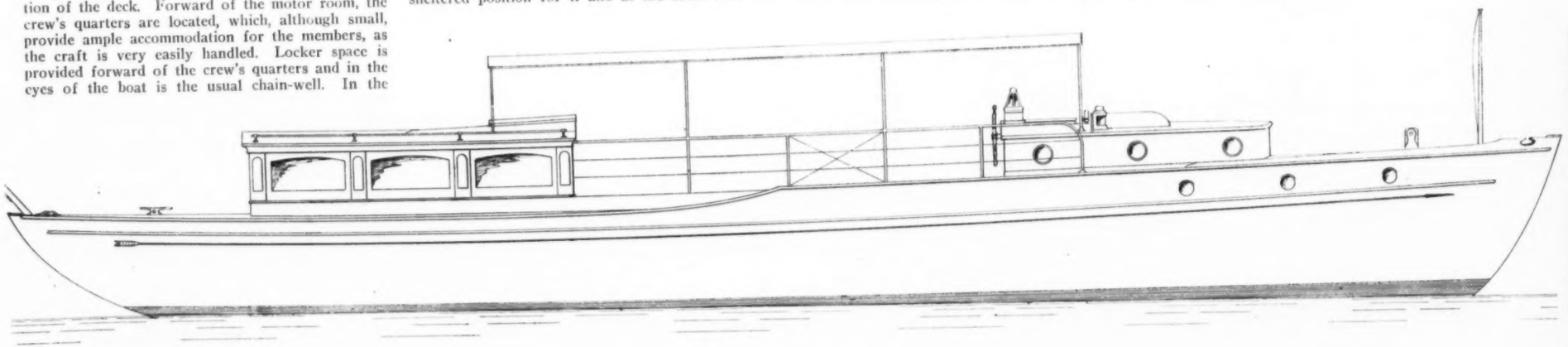
A Shallow Draft Vessel That Has Been Constructed Without Losing Sight of the Fact That She May Encounter Heavy Seas.

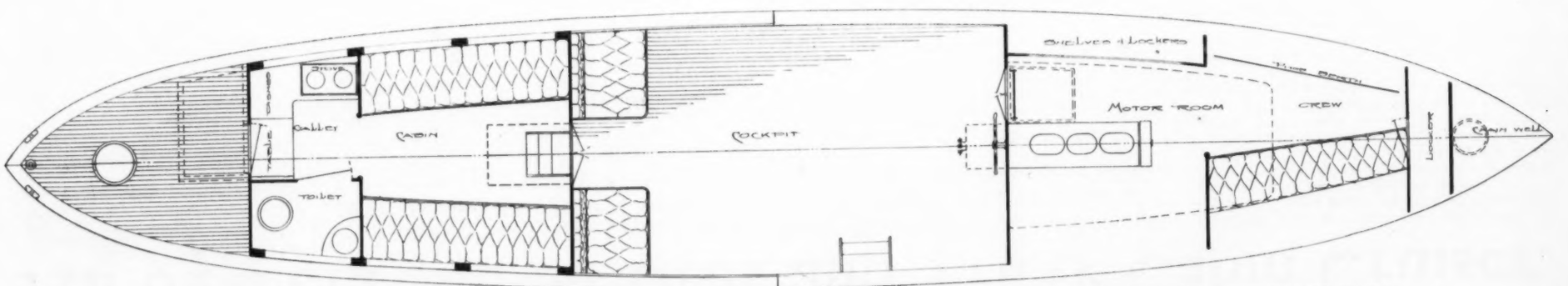
AN attractive day cruiser with somewhat unusual cabin and deck arrangements is shown in the plans below. This craft is being built by the Matthews Boat Company, of Port Clinton, Ohio, for Mr. Chas. E. Ringling, the well-known circus man, who expects to use her principally upon Sarasota Bay in Florida during the winter months. It is possible that she may be brought North in summer, but her design has been carried out primarily with the idea of making her useful in the shallower waters of Florida. She is, however, a very seaworthy craft so that her use will not be confined of necessity to sheltered waters.

The arrangement of this vessel provides for motive power placed well forward under the cabin section of the deck. Forward of the motor room, the crew's quarters are located, which, although small, provide ample accommodation for the members, as the craft is very easily handled. Locker space is provided forward of the crew's quarters and in the eyes of the boat is the usual chain-well. In the crew's quarters, accommodation is provided by an extension transom upon the starboard side and a pipe berth upon the port side. The motor room is entered by a hatch upon the port side of the cockpit and, aside from the motor, there is nothing else in this compartment. Shelves and lockers, however, are placed upon the port side for the accommodation of tools, etc. The motive power consists of a six-cylinder, 65 h.p. motor which should drive the vessel at good speed.

The location of the cockpit amidships allows a sheltered position for it and at the same time the deck erections are not of sufficient height to interfere with the view in all directions. This cockpit is 14 feet in length and gives comfortable space for a party of considerable size. Wicker chairs may be placed in this space and there are in addition comfortable seats at the after end just forward of the cabin upon either side of the companionway leading to it. The cockpit, which is in reality a sort of submerged deck, is covered by an awning and is entered from the starboard side by boarding steps. The awning is made of waterproof khaki and is provided with side curtains so that the space can be made weatherproof in a storm. The submerged deck is self-bailing and as it is well protected it makes a comfortable space in almost any kind of weather. Accommodation for the helmsman is provided in the forward portion of this cockpit and the wheel extends through the bulkhead in the forward cabin, so that the craft can be easily controlled.

The after cabin, which is entered through a companionway from the cockpit, having three steps, provides a shelter and is arranged with two transoms of berth length, one upon either side. Aft of the starboard transom is a toilet room and opposite this is a well-equipped galley with a small table placed between these two compartments. An ice-box is located under the after deck with a hatch above for filling from the outside.





A Matthews craft for Florida use. Her motive power is placed well forward and her main cabin is aft. Note the relative dimensions of her 'midship cockpit.

An 81-Foot Raised Deck and Trunk Cabin Cruiser.

One of the Larger Types of Motor Yacht Which Has Become So Popular During the Past Few Years. An Unusual Construction of Stem and Stern and the Use of Two Funnels Add to Her Appearance of Speed.

SWASEY, Raymond & Page, Inc., of Boston, Mass., have recently designed for Mr. D. W. Flint, of Providence, R. I., the two-funnel cruiser shown in the accompanying plans. Mr. Flint will use her for cruising along the New England coast and she is of sufficient size and power to cover a large cruising radius.

As the designs show, this craft is a combination of the raised-deck, trunk-cabin and deck-house type, which has been developed by her designers and which makes her very similar in appearance to the steam yacht, Cigarette.

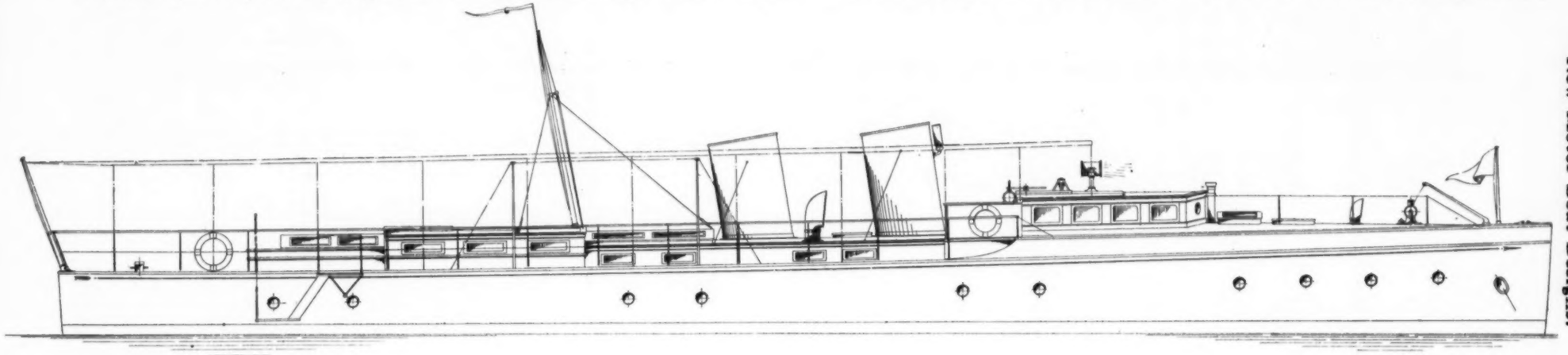
Her dimensions are 81 feet over all, with a beam of 12 feet and a draft of 4 feet; being equipped with a 100 h.p. Twentieth Century motor of six cylinders, she should show good speed.

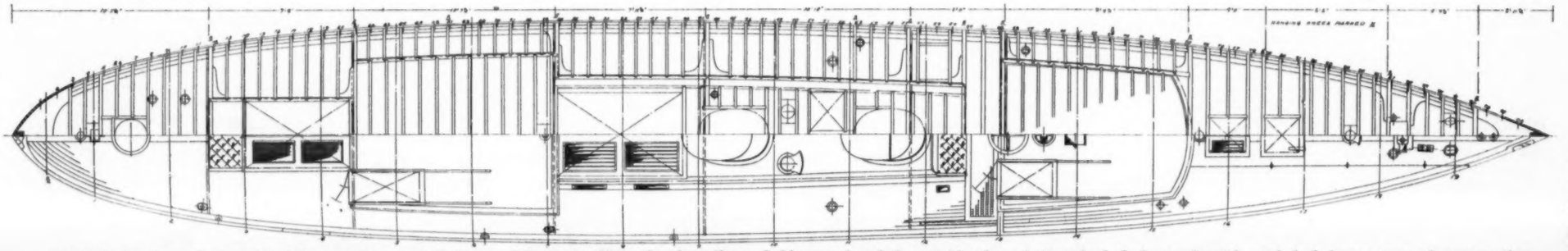
The lines of this craft show by their unusual depth and dead rise with good flare forward, an excellent buoyancy and considerable amount of freeboard, although not too much to spoil her lines. She has a plum stem and a torpedo stern, giving her an appearance of speed and, although she has not been in the water a sufficient length of time to be tested fully, she bears every promise of exceeding her requirements in this respect.

The construction is fairly heavy throughout and the first thought has been seaworthiness in every line. The two funnels with the single signal mast and the long deck space covered by an awning give her an excellent appearance and the low line of her deck quarters adds to this.

The vessel is designed to be controlled from a bridge just aft of the forward cabin and forward of the funnel. To this bridge are extended engine controls and a telegraph to the engine room.

In the extreme forward part of the vessel is a toilet for the use of the crew and aft of this is the forecastle accommodating four men by means of two pipe berths upon each side. This compartment is entered from the forward deck through a hatch and pipe ladder. Aft of the forecastle is the galley which is conveniently located with respect to the dining-room placed just aft of it. The forward end of the dining-room and the after end of the galley are designed so as to form a combination sideboard and china closet to economize space, at the same time





A late design from the boards of Swasey, Raymond & Page, of Boston. Note the clean lines of this vessel and the combination of the raised deck, trunk cabin and deck house type of construction.

A late design from the boards of Swasey, Raymond & Page, of Boston. Note the clean lines of this vessel and the combination of the raised deck, trunk cabin and deck house type of construction.

adding to the appearance of both compartments. The galley is lighted by a skylight and is completely equipped, the port side of this compartment being occupied by a refrigerator with shelves over it and a food locker. Upon all sides of the dining saloon are lockers and a table occupies the center. This saloon is lighted by Pullman windows and is provided with comfortable seats.

Aft of this and under the bridge is the captain's stateroom extending the full width of the vessel and provided with clothes closets, shelves, a wide berth extending across the beam of the ship and a desk upon the starboard side. The engine room is placed amidships and contains in addition to the power plant, two 250-gallon gasoline tanks with lockers under, placed one upon either side of the compartment, an electric lighting plant, a work bench and additional locker space. The engine room is separated from the rest of the boat by watertight bulkheads.

Aft of the engine room are two staterooms, simply arranged and well equipped, each being entered through a door from the after cabin and one occupying the port side of the vessel and the other occupying the starboard side. Sliding doors extending longitudinally separate these two staterooms. The after cabin with which these rooms communicate is provided with alcoves and lockers upon either side and a table is placed in the center. Upon the port side, the after end of the cabin is occupied by a toilet room and aft of this upon either side of the vessel are additional clothes closets conveniently located.

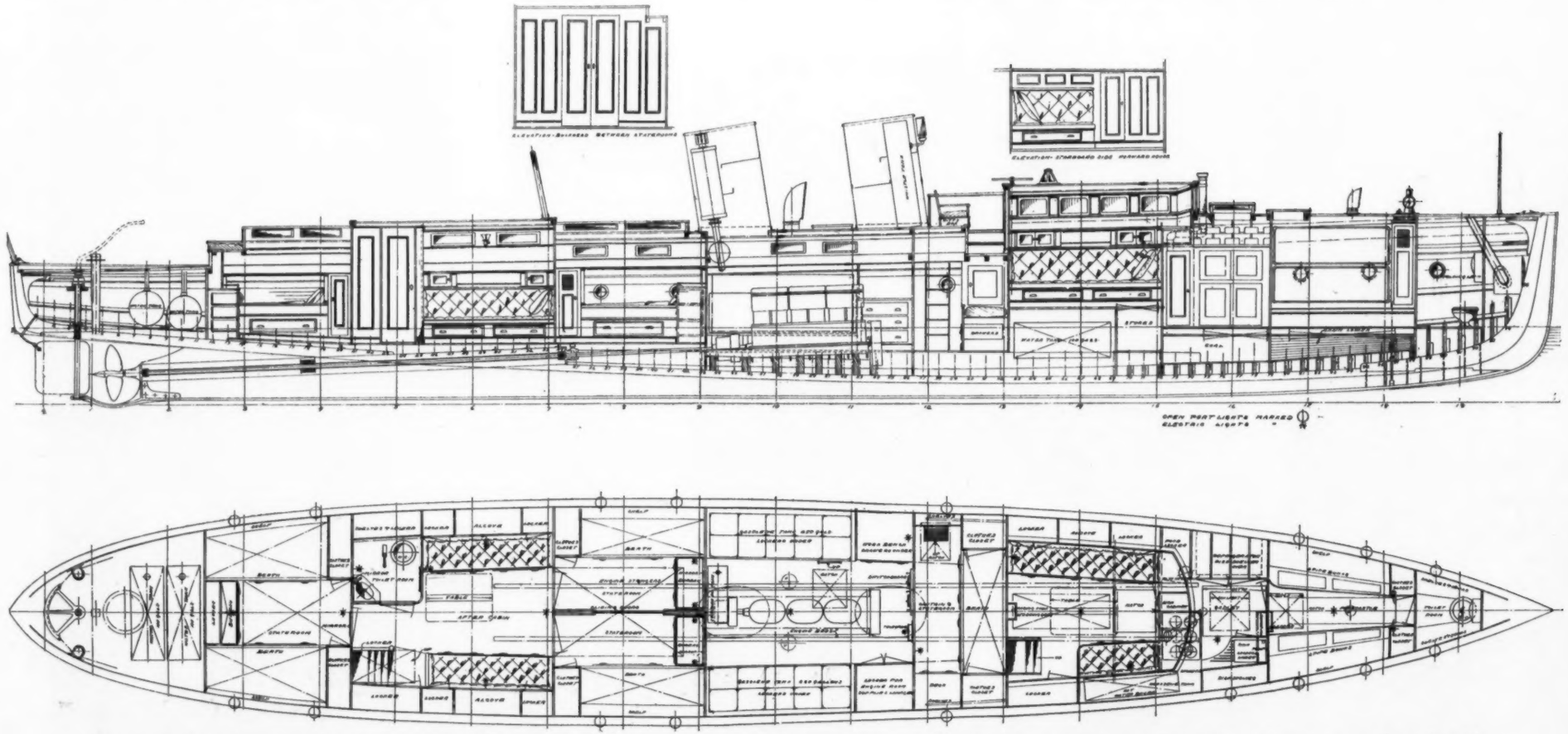
The owner's stateroom is at the extreme stern and is equipped with two wide berths, a bureau, lockers, closets, etc. This extends the full width of the vessel.

Three 100-gallon water tanks are provided, two of them being placed under the after deck and a hot-water supply is furnished from the boiler just aft of the galley.

Vessels of this type have recently become very popular, as they combine speed and comfort with an unusually pleasing appearance. The two stacks with a single mast placed so far aft would doubtless present a far less pleasing appearance were the lines of the stem and stern of the conventional design.

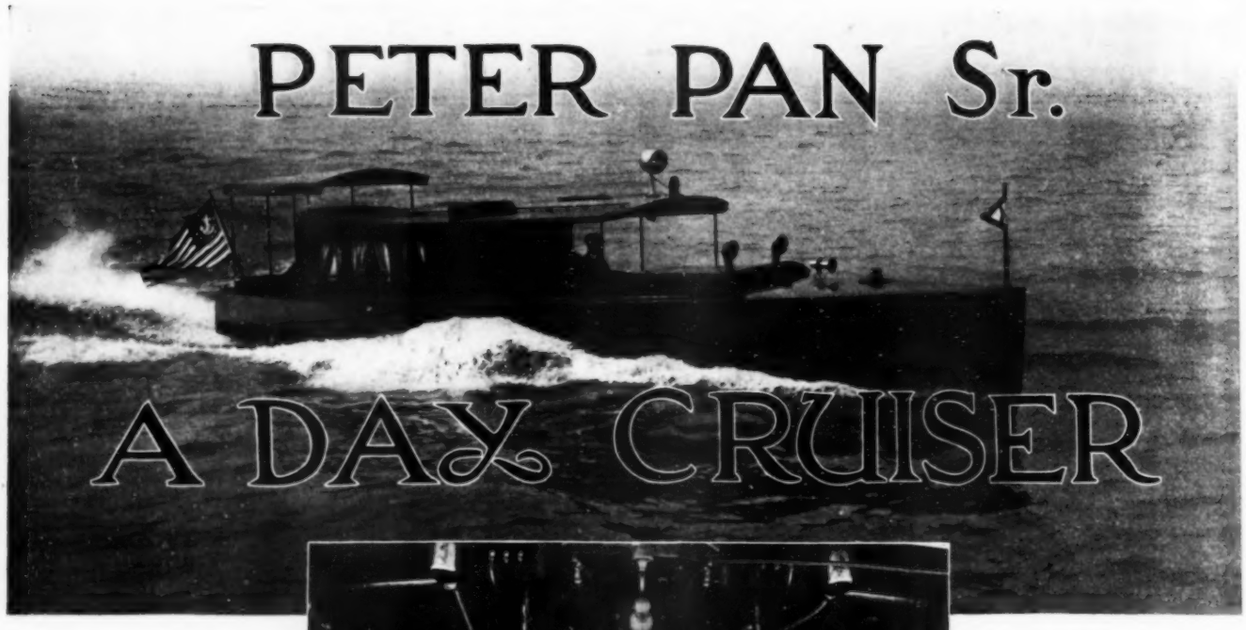
For an 81-foot craft, she draws comparatively little water, as, although she will be used principally along the coast where shallow draft is not so essential a feature, she will without doubt cruise in the shallower waters of the south as well. Her power plant is very convenient and the angle at which the shaft enters the water is so slight that no great depth of keel is necessary to fully protect the propeller. This is, however, protected by a skeg extending from the keel to the bottom of the rudder post.

This vessel is building at Read's Ship Yard, Boothbay Harbor, Maine, and, according to the original plans, should take the water by the first of June.

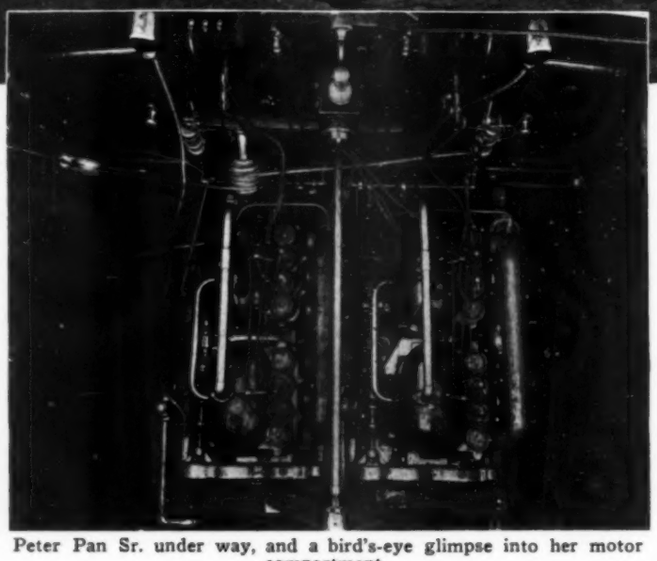


Accommodation and arrangement plans of Mr. Flint's interesting cruiser. Her below-deck space is particularly well laid out as she can accommodate a large party very comfortably.

PETER PAN Sr.



A DAY CRUISER



Peter Pan Sr. under way, and a bird's-eye glimpse into her motor compartment.

AN attractive and interesting twin-screw forty-foot day cruiser with a number of especially noteworthy features has been designed and built recently by the Reliance Motor Boat Company of New York City for Mr. James Simpson, also of New York City. This craft is credited with a speed of 20 miles per hour, and Mr. Simpson is particularly pleased with her performance. This vessel is known as Peter Pan Sr., being modeled after the famous Peter Pan III, and has very pleasing lines.

The lay-out of Peter Pan Sr. is complete to the last detail and her cabin arrangements include everything to add to the comfort of her owner. The port side of the cabin is fitted with a sofa upholstered in green plush and upon the starboard side is a Pullman berth and a separate toilet room. This room is equipped with Sand's fittings and the electric lighting switchboard for the vessel is also located in this compartment.

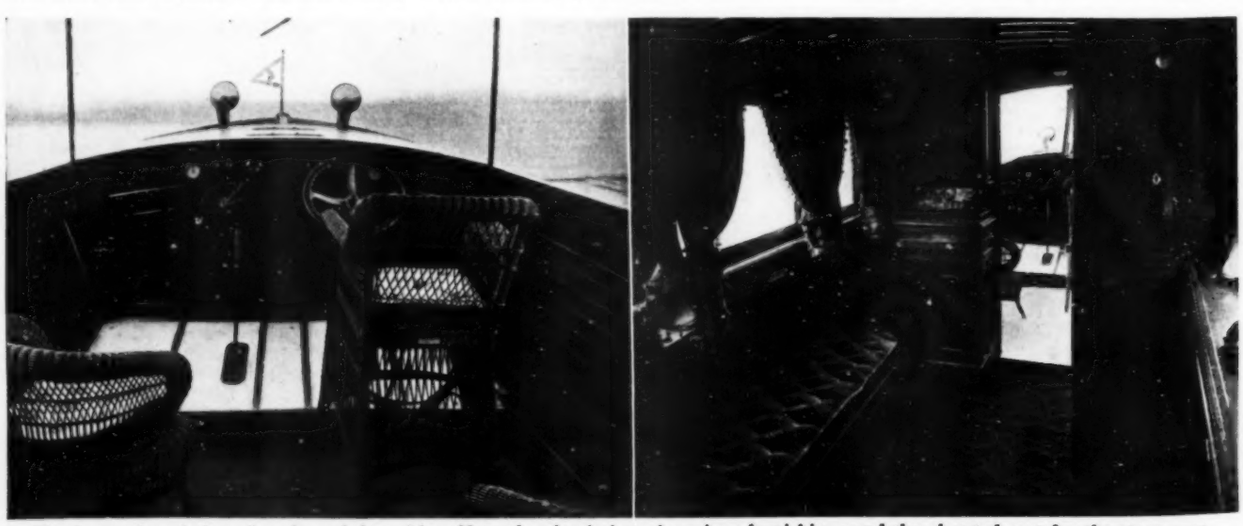
The cabin is fitted with a buffet and is lighted and ventilated by six large plate-glass windows of the drop sash type, and fitted with brass rods from which hang green silk curtains with white satin backings. The entire cabin, as well as the engine room and cockpit, is lighted by electricity.

The construction of this craft throughout is of the highest grade, the entire frame being straight grain white oak. The planking, decking and exterior and interior joiner work is of selected Mexican mahogany, and the forward cockpit, which is of ample size to accommodate six persons, can be protected in rough weather by storm curtains.

The craft is controlled from the forward cockpit, as the illustrations show, all the controls for the motor, including the self-starter, being mounted upon the forward bulkhead aft of the motor.

The motor compartment is forward of the cockpit and is fitted with two 4-cylinder, 4-cycle, 5 x 5-inch Reliance Continental motors with Kingston carbureters, Splitdorf magnetos, gear water pumps and Paragon reverse gears. The electric lighting plant is also installed in the motor compartment. This consists of a dynamo with an output of 15 volts and 15 amperes, which is designed to charge a 12-volt, 120-ampere hour storage battery. This battery is of ample size to furnish light for the 25-candle power searchlight and three 6-candlepower running lights in addition to her regular equipment.

Peter Pan Sr. will be used near Mr. Simpson's summer home at Shippan Point, Stamford, Conn., in connection with a new boat, Peter Pan V, which is now under construction. She will be only 20 feet in length, but is expected to prove capable of 40 miles per hour. Peter Pan V will be equipped with a six-cylinder Reliance motor of 110 h.p.



The forward cockpit and a view of the cabin. Note the simple but luxurious furnishings and the elevated seat for the steersman.

An Unusual 60-Foot Cruiser.

A Vessel With an Unconventional Lay-Out and Extreme Beam, Allowing Novel Arrangement Features That Add to Her Attractiveness and Provide a Midship Location for the Motors.

BUILDING by the Niagara Motor Boat Co. of North Tonawanda, N. Y., is the rather unusual 60-foot cruiser whose plans are shown upon this and the following page.

The general dimensions are, length over all, 60 feet; beam, 15 feet; and draft, 4 feet, which provides for a very commodious 60-foot boat. It will doubtless be generally supposed that such a radical departure from the conventional ratio of beam to length would tend to give a tubby appearance to the craft. Such is decidedly not the case, however, and credit must be given to J. Murray Watts, the well-known Philadelphia naval architect, for producing a clean and graceful model capable of maintaining a speed of 12½ miles per hour on a moderate amount of power.

A glance at the plans will show many advantages over the conventional lay-out. At the after end is found a large stowage space under the after deck, in which is located the 100-gallon gasoline auxiliary supply tank which is saddled just aft of the watertight bulkhead which separates this afterhold from the owner's stateroom.

From this point forward the great beam of the craft is noticeable. On the port side, in the owner's stateroom, is found a real double bed 4 feet 6 inches wide, while on the starboard side is a full-width transom, allowing plenty of room between them. This room has a large dresser, measuring 48 by 26 inches, built in at the after end, with large hanging lockers on either side. The toilet room is close at hand and is provided with large linen lockers.

Next to the toilet on the port side is another large stateroom provided with a double bed and dresser, while on the starboard side will be found a full-width transom, back of which is additional locker space.

The engine room located about amidships is possibly the most interesting part of the outfit. It is here one obtains the best idea of the unusual proportions of this craft. Entering through a door from the after cabin one steps out upon a platform over the reverse gear of the starboard machine, which is siuated about 9 inches above the engine room floor. Throughout this compartment 7 feet headroom is possible. One is immediately impressed with the fine accessibility of all equipment. The two new type, long stroke 25-30 h.p. Sterling motors are installed in such a manner as to allow free passage between them and upon each side.

Upon the starboard side near the after bulkhead is installed a very compact and reliable 1 k.w. Fay & Bowen lighting plant, which is placed upon a raised foundation in the bilge leaving a clear passageway of three feet between it and the starboard motors. To make this lighting system complete, a large storage battery is located upon the port side in a corresponding position. This equipment provides current for 25 16-candlepower incandescent lights throughout this boat, in addition to operating the 2,000-candlepower arc searchlight located just forward of the bridge.

Of special note is the auxiliary pump direct connected to the generating set by extending the armature shaft of the dynamo and providing a sliding gear by means of which the pump may be put in operation at any time. This pump serves three purposes, since by regulating valves it will pump the bilge or fill the fresh-water tanks. Two hose connections have been provided in each side of the deck house and as this little pump has a capacity of 30 gallons per minute, a fine steady stream may be had at all times for washing down the decks.

The main gasoline supply tanks are saddled one at each side, and as they are of 200 gallons' capacity each, they will afford, with the auxiliary tank aft, a total fuel supply of 500 gallons, giving a cruising radius of 700 miles. Fresh-water tanks of generous size are located overhead, making possible a gravity flow to all wash-basins and the galley sink. These will be provided with a hot-water supply as well.

A door in the forward bulkhead communicates with the large galley which is located on the raised floor of the forward house. As this floor is 30 inches above the top of the keelson an exceptionally large stowage space is thus provided. The galley is unusually large, being equipped with a good-sized ice-box, a sink, dish-lockers and a four-hole Shipmate range. As the owner prefers to have meals served on the bridge when weather permits, a removable panel has been provided in the after bulkhead of this raised house forward that the eatables may be passed directly from the galley to the table on the bridge.

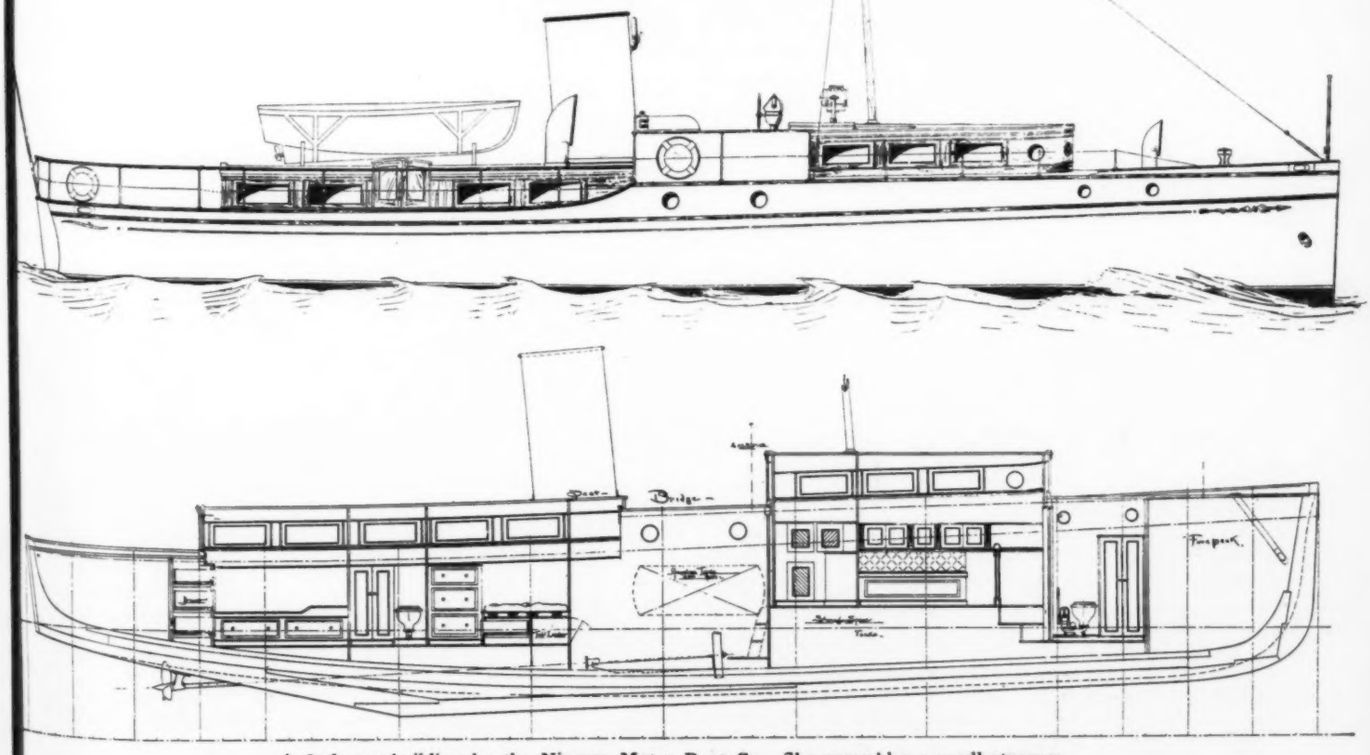
The saloon forward, of course, will be essentially a lounging and smoking room, but the transoms are full size and will sleep two nicely.

Forward of the saloon is another large toilet and additional lockers. As there would be ample room in the engine space for this toilet, accommodations for the crew could be provided forward.

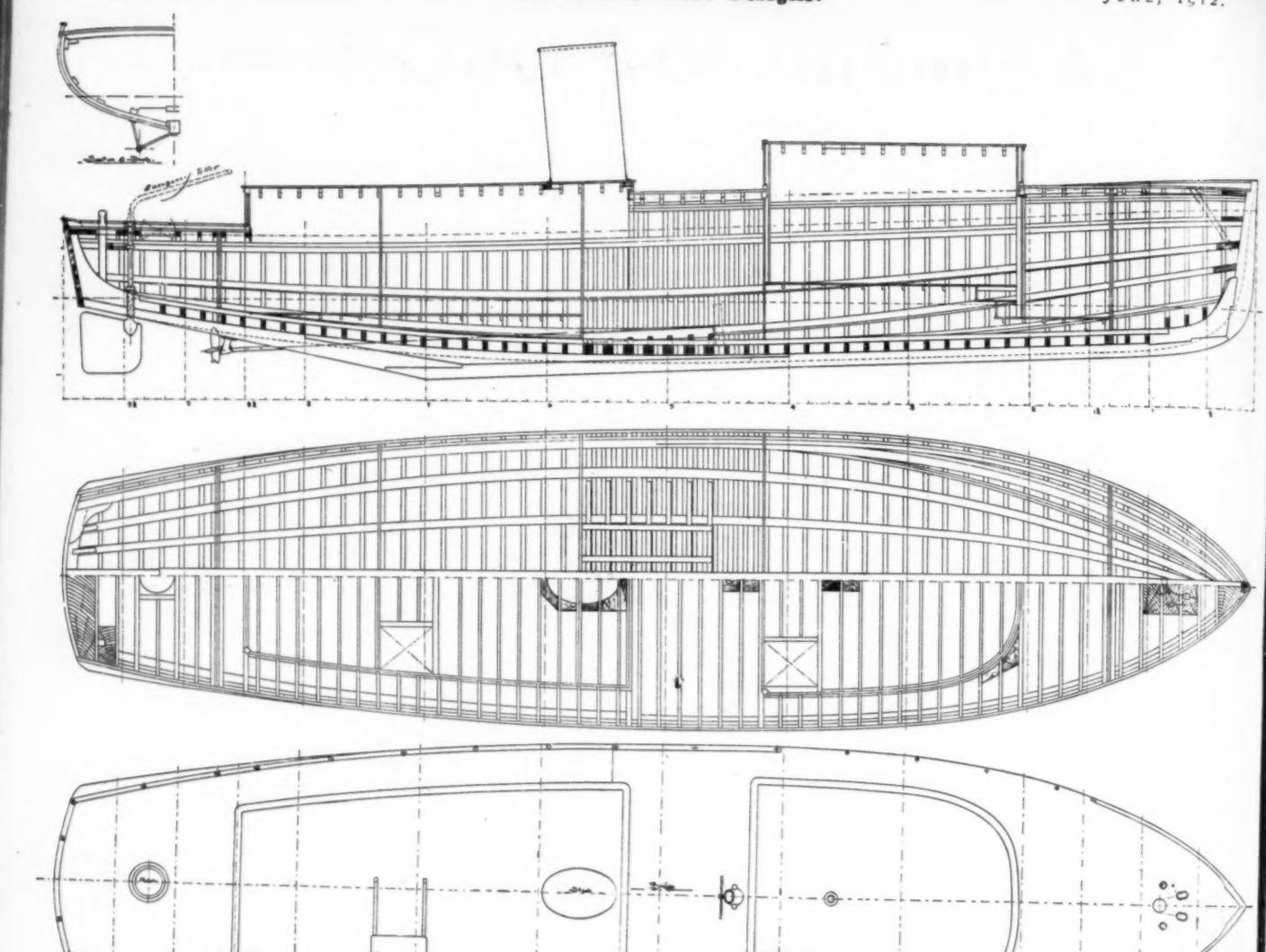
The fore-peak is given over to the anchor chains, paint, stores, etc., and is entered by a watertight door through the bulkhead. As the two 300-pound stockless anchors will be stowed in hawse pipes, anchor davits and anchor chocks will be dispensed with.

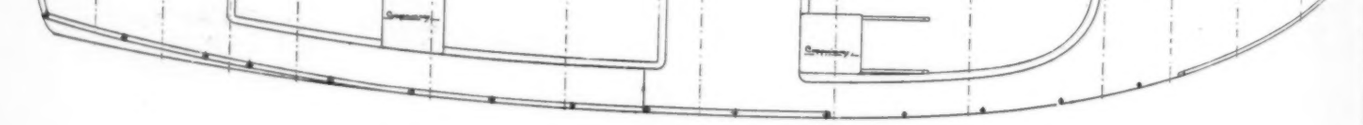
The deck houses are of solid mahogany and the interior will be finished in white enamel with mahogany doors and rails.

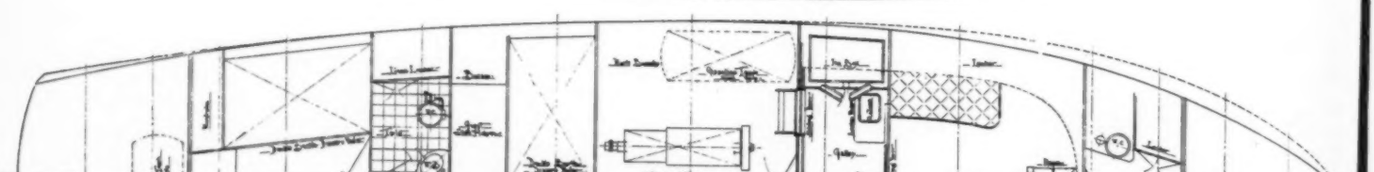
The owner, Mr. W. H. Russell, of Rochester, N. Y., will use his boat both on the Great Lakes and the seaboard. He, doubtless, will be among those present when the fleet starts from New York for San Diego.

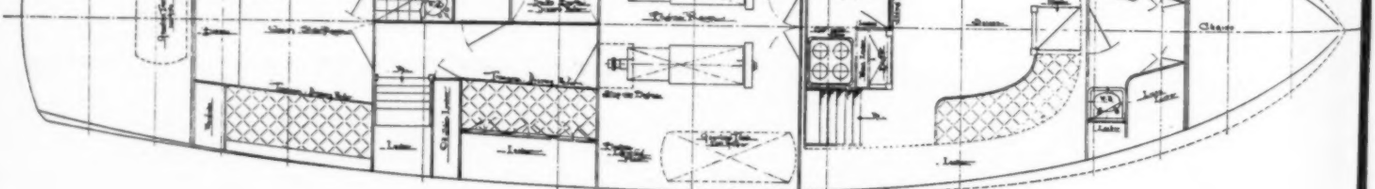


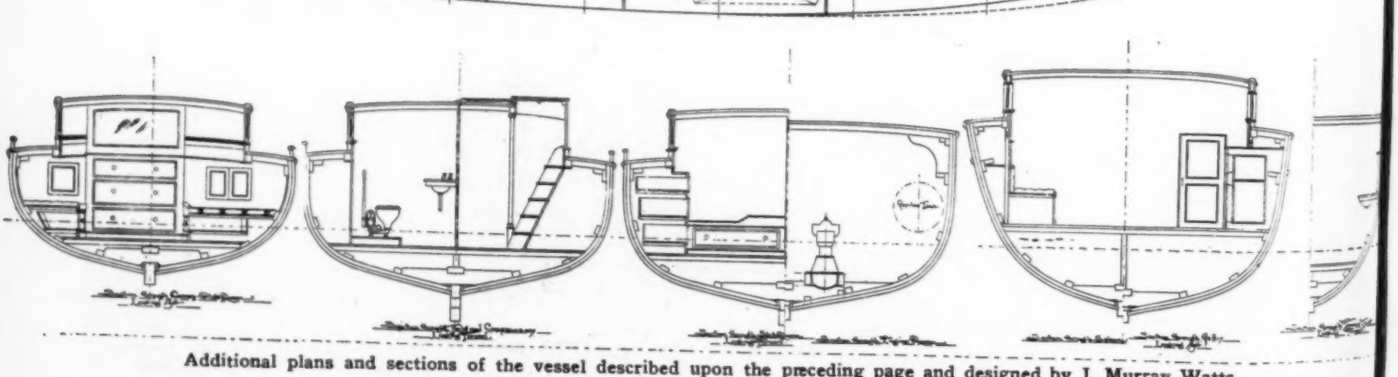
A 60-footer building by the Niagara Motor Boat Co. She resembles a small steamer.











Additional plans and sections of the vessel described upon the preceding page and designed by J. Murray Watts.

A 50-Foot Fast Cruiser.

One of the Latest Designs by Carleton Wilby, Giving the General Impression of a Larger Craft.

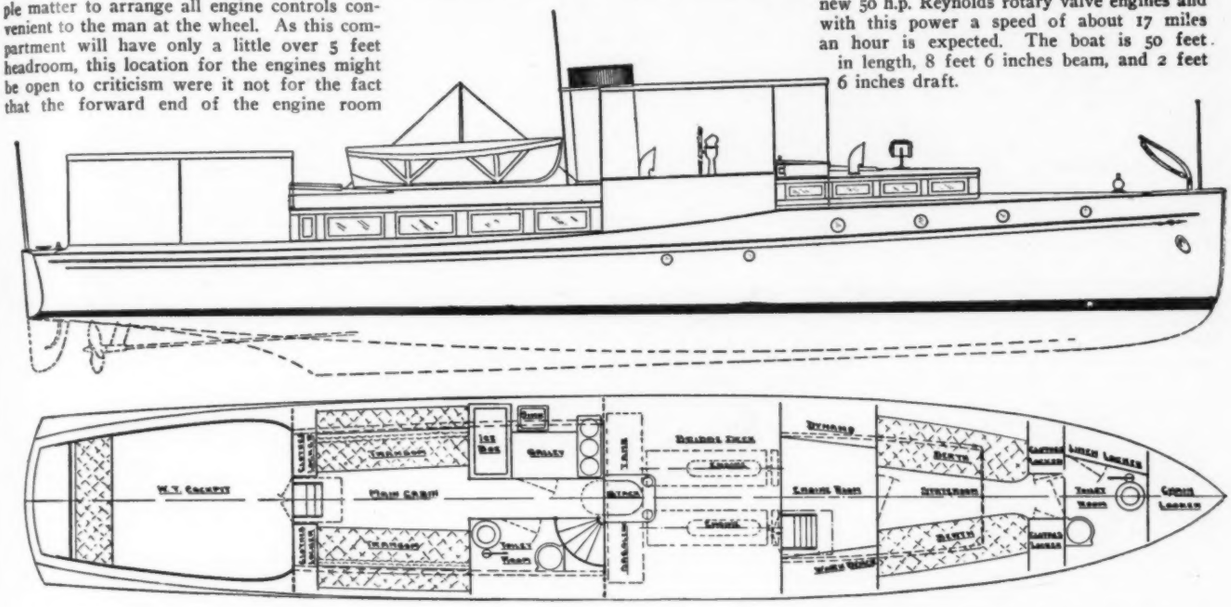
A FINE type of the modern fast cruiser is shown in the accompanying plans by Carleton Wilby, of Detroit, for a gentleman well known in Detroit automobile circles. Although only 50 feet in length, this boat has the appearance of a much larger craft, as the design has been worked out to avoid as far as possible that top-heavy and "bunty" appearance so often noticeable in the small cruiser.

The engines and gasoline tank are located below the bridge deck, which makes it a simple matter to arrange all engine controls convenient to the man at the wheel. As this compartment will have only a little over 5 feet headroom, this location for the engines might be open to criticism were it not for the fact that the forward end of the engine room comes under the raised deck and has ample headroom. At this end are located the workbench and lighting set.

A large double stateroom with clothes lockers and toilet room adjoining are shown forward of the engine room. The after cabin is entered from the bridge with steps on the starboard side. Toilet room and galley are located at the forward end, and the main cabin with transom berths each side is shown aft.

A roomy cockpit is provided at the after end, with entrance to main cabin. The cockpit and bridge are sheltered with removable canopies, supported on pipe stanchions, and the bridge deck is further protected by a spray cloth.

The power plant will consist of two of the new 50 h.p. Reynolds rotary valve engines and with this power a speed of about 17 miles an hour is expected. The boat is 50 feet in length, 8 feet 6 inches beam, and 2 feet 6 inches draft.



This 50-foot cruiser by Carleton Wilby can travel at 17 m.p.h. and is equipped with one of the new Reynolds motors.

Talks With Our Naval Architects.

Some of the Views of William H. Hand, Jr., a Pioneer in the Field of the V-Bottom Type of Construction and a Firm Believer in its Ultimate General Use for the Smaller Craft.

WILLIAM H. HAND, JR., naval architect of "V-bottom" fame, is still young in years and as active and full of energy as when he ran on his 'varsity track team and took an active part in the various branches of college athletics.

Mr. Hand comes of a sea-faring race, and it is not strange that the building of boats became his life-work. From early childhood, the call of the deep blue attracted him and at first he planned to enter Annapolis, but like many a wise man he changed his mind, and decided to study naval architecture.

After completing his course at Brown University, where he fitted himself for his chosen profession, Mr. Hand opened an office at New Bedford, the famous old whaling city of Massachusetts, and was soon actively engaged in turning out sailing craft of the types then in vogue in Buzzards Bay and adjacent waters. That was in the year 1896. These boats made a fine reputation for speed and general excellence and Mr. Hand's reputation as a successful designer soon extended, even to the other side of the Atlantic. The advent of the motor boat found him equally as successful in turning out that type of craft, and he designed many of the conventional cabin cruisers and runabouts. On the walls of his office are large photographs of many good-sized cruisers, both power and sail, built from his plans. One of his raised-deck cruisers was the Picaroon, a 40-footer which won the Marblehead Ocean Race in 1907. This boat was more or less a modified V-bottom and attracted wide attention. In 1901, Mr. Hand designed the 46-footer, Wing and Wing, one of the first, if not the very first, raised-deck type motor cruiser built in this country. This type has since gained great popularity.

Piute II, 21 feet over all and equipped with a 30-H. P. Erd motor, can do 23 m. p. h.

Of late years, Mr. Hand has devoted a good part of his time to studying and perfecting the V-bottom type of motor boat, and as I dropped into his office, as a representative of MoToR BoatinG, to have a few moments' chat with him, I found him busily engaged on a drawing, of what he hoped, as he afterwards explained, would turn out to be the fastest and best boat of this type that he had ever designed.

"It was in 1901," he said, "that I began studying the type of V-bottom sail boats used to some extent around New Bedford and became convinced that this type of hull offered great possibilities for motor driving. Shortly afterwards I built a 16-foot V-bottom boat which, with a 2½-h.p. motor, attained the then remarkable speed of 8 miles and was more or less a 'wonder' in many ways. I experimented with several more boats of the same general dimensions and power during the following summer, and gathered much valuable data.

Mr. Hand here glanced around at the walls of his office which were decorated profusely with photographic testimony that the V-bottom has come to be almost a standard type, if one can judge from mere numbers in use and from the satisfied expressions that the camera had caught in the faces of the various helmsmen. Models, too, lined the walls of the room and even the novice could see how the gradual development of the V-bottom has been an evolutional one.

"I feel that I must give credit to the sailboat in the beginning," said Mr. Hand, "and I find even now, when I can honestly say that I consider my models to be a thorough success, that the old type of sailing yacht can still act as an efficient instructor. Every little while, when I walk along the docks, or study the actions of a sail boat under various conditions of weather, I learn some detail that may prove of vast importance in the construction of my next V-bottom motor craft.

"As to its popularity at the present time I can leave you to judge for yourself, although I am firmly convinced that the passing of years will see more and more of this type in use. Particularly for small boats is this model gaining in popularity, as the shape of the hull has many things in its favor, and so far as I have been able to discover, practically no disadvantages.

"My first boats of this type," Mr. Hand continued, "were planned to compete with the then popular dory and very quickly demonstrated that they had more speed, were fully as seaworthy and were steadier. In fact, they possess none of the 'cranky' tendencies of the average small power boat, capable of any speed. Each year, since, I have built from many V-bottom designs and, for two months during each summer, I have experimented with the boats, testing them out under all kinds of service conditions. I do not mean that I tested them on rivers or ponds, but out on Buzzards Bay and the Atlantic. You may know that Buzzards Bay furnishes splendid opportunities for testing, as it is probably the most trying body of water on the Atlantic Coast. It is open to the prevailing strong S.W. wind where tidal currents cause rips and a chop which try the qualities of a boat severely. I have, therefore, been very fortunate in having every opportunity to observe the action of these boats under strenuous conditions and this has been of much value in developing and perfecting the designs.

"What was my first notable V-bottom? The Squke was the name I gave her, and it was in the spring of 1908 that she was launched. She was an 18-footer, and with a 10 h.p. motor was capable of over 16 miles per hour. For a little boat, she attracted great attention, for there was no boat of her size in these waters as seaworthy or as fast with equal power. The Squke was followed by Piute, and Piute II.

William H. Hand, Jr.

The Piute III is now under construction at my shop. She is a 24-footer, and will represent my best ideas in this now popular type."

"I have heard it said," I suggested to Mr. Hand, "that practically all of the very fast motor boats of to-day show the influence of the V-bottom. Do you agree?"

"I certainly do," he replied; "and I will go still further. Many of the famous hydroplanes are merely modified V-bottoms with steps added. Sometimes one, and sometimes several steps. A glance at the plans and photographs of some of the more notable ones, published in your paper from time to time, will verify this statement."

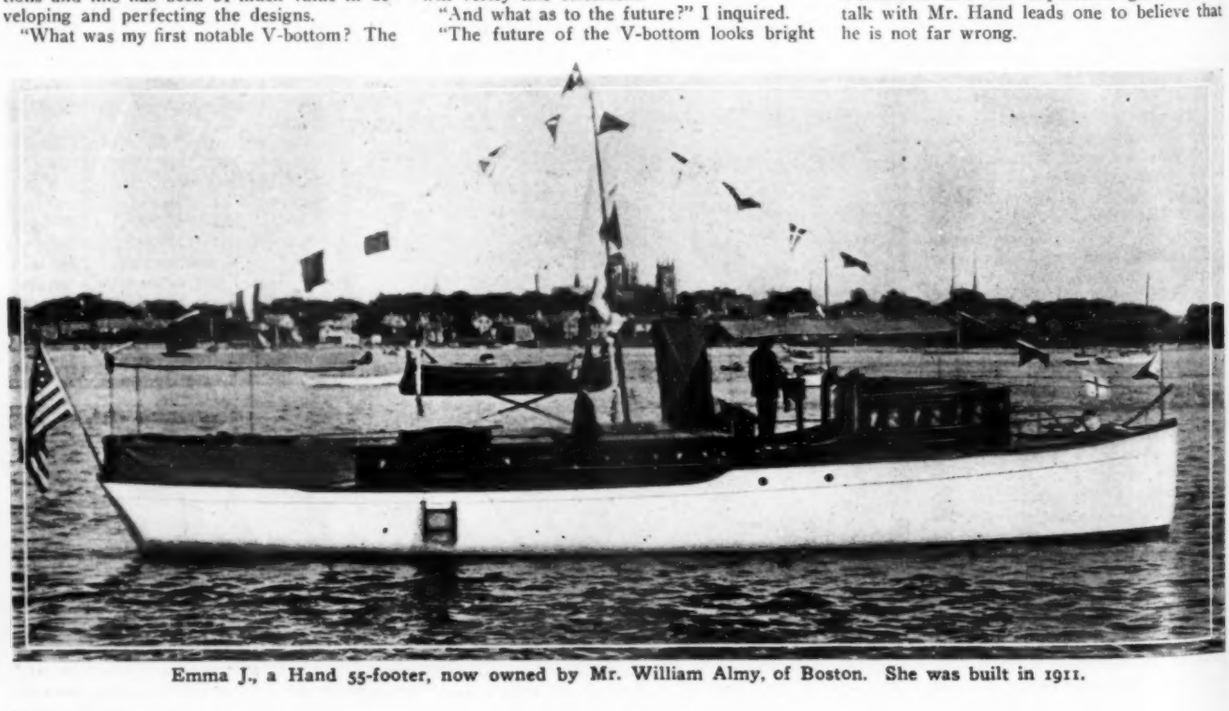
"And what as to the future?" I inquired.

"The future of the V-bottom looks bright and rosy," was the reply. "These boats have come to stay, having demonstrated beyond the possibility of doubt that they have made good all that has ever been claimed for them. At first it was not an easy matter to make converts, for the motor boat man of a few years ago was wedded to the regulation round-bottom type, and could see nothing good in the new style of boat, but during the last year or two, the type has been widely copied. That the type has a great future is assured from the fact that the V-bottom is easy to construct. No steam bending is required, it is very rigid structurally and is fast with moderate power. With high power, this type of boat is very fast, and still a safe and wholesome craft. To sum up, they combine speed and seaworthiness to a degree which I believe is impossible in any other style of small boat.

"I thoroughly believe in V-bottoms," declared Mr. Hand, and to hear him make this statement, you knew he meant it. "After years of careful study and experiment, I believe that they are the best type of small craft yet designed for general purposes, whether for speed or comfort, rough or smooth water. While it does not seem to be generally understood, it is nevertheless true, that the little 25-foot yawl Sea Bird, in which Thomas Fleming Day with two companions crossed the Atlantic Ocean last summer, is a V-bottom. Mr. Day speaks of the qualities of this little boat in the highest terms, and intimates, that in his opinion, it would be impossible to build a round section craft which would be an improvement on Sea Bird as a sea boat."

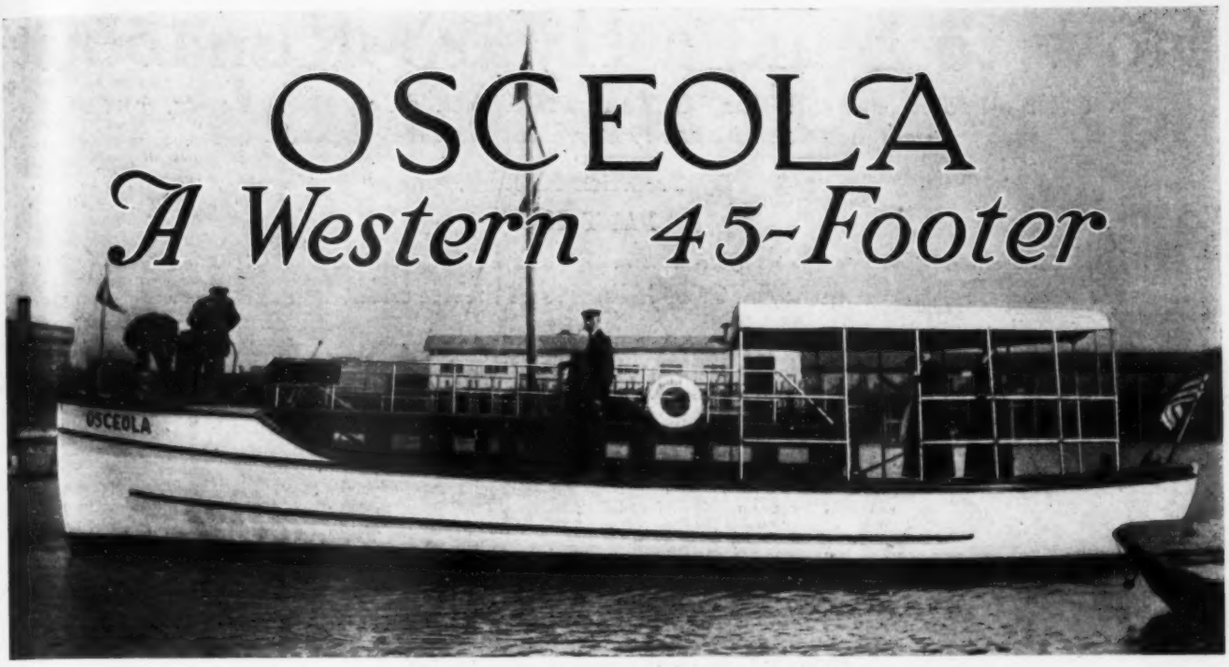
That the V-bottom type of craft is a popular one cannot be doubted, as the plans that have been published in this magazine have met with great favor upon the part of amateur builders who have reached a point where they can recognize the advantages of such a form of construction. Along the Massachusetts coast, there are many such boats, principally of the smaller type, and they appear to venture out without fear in almost any sort of weather, a very sure indication that they are of a seaworthy model and always ready for heavy weather.

Mr. Hand believes that the V-bottom type will prove to be the ultimate construction at least for the small craft where considerable speed is desired without any sacrifice of seaworthiness and the impression gained in a talk with Mr. Hand leads one to believe that he is not far wrong.



Emma J., a Hand 55-footer, now owned by Mr. William Almy, of Boston. She was built in 1911.

OSCEOLA
A Western 45-Footer



Designed Primarily for Use on the Sacramento River.

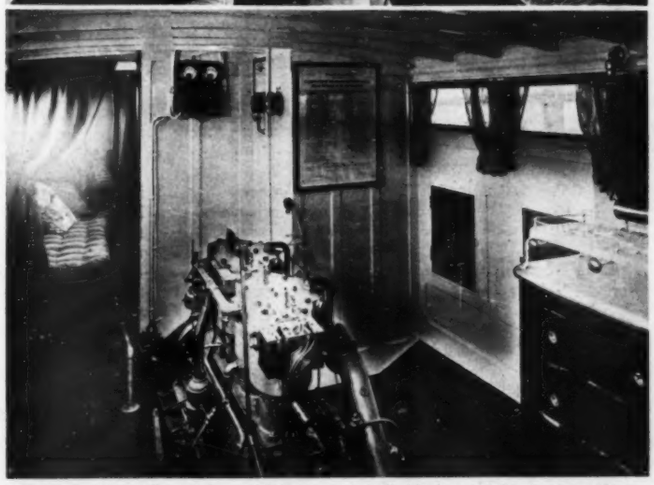
OSCEOLA, owned by Commodore M. J. Curtis, of the Sacramento Boat Club, and recently launched at Sacramento, is a type of boat that is becoming very popular in Western waters, and, while not altogether unlike several cruisers in that vicinity, yet it embodies several original ideas of design which make the craft adapted to that inland stream, the Sacramento River.

Although, the capital of California is located about 60 miles from the mouth of the river and over 100 miles from the mouth of California Bay, Commodore Curtis has chosen a design in which he may safely cruise in any water, no matter how exposed. In construction she is sufficiently heavy to meet all requirements. However, her draft and size are not so great as to prevent her from being able to navigate even inland and less exposed places.

Osceola is 45 ft. overall length with a load waterline length of 42 ft. and a maximum beam of 10 ft. 6 in. She is equipped with a 1912 four-cylinder Twentieth Century engine of 5¼ in. bore and 7¼ in. stroke, rated at 24-30 h.p. Lighting is done by electricity throughout, current being furnished by storage batteries, which are kept charged by a large dynamo belted to the flywheel.

The beam of 10½ ft. allows the sides of the deckhouse to be located well inboard without seriously interfering with cabin space and permits the wide deck on each side of the cabin house. Instead of following the usual scheme in the cabin of carrying the berths and transoms out to the sides of the boat, they have been carried only to a point beneath the cabin-house sides. The sides of the cabin are then carried up to the deck from this point and neatly paneled, forming a large amount of locker space under the deck on both sides.

The interior of the boat is finished throughout in white enamel with mahogany trim and mirrors fitted in the locker doors in the forward cabin. Sleeping accommodations are provided for five persons in the two main cabins in addition to at least one in the engine room. Cabin layout is an excellent one, two sleeping cabins being located well forward, aft of a large forward locker provided for storage space, access to which is through a large hatch in the deck. The engine room is located just aft of the sleping cabins and is of ample proportions to allow access to all parts of the power plant. One corner of the engine room is given up to the galley which is near the companionway to the after deck and is near at hand when dining on deck. The galley is equipped with a three-burner alcohol stove, large lockers for food and provisions and a commodious ice-box.



The comfortable cabin, which may be divided at night by portières, and the engine room with the 24-30-h.p. Twentieth Century motor.

Osceola has a flush deck aft with an awning over this portion of the boat, but which does not give her the top-heavy appearance that many flush-deck boats are apt to have. There is also a large amount of available deck space on the cabin-house top.

The steering gear and engine controls are brought out on deck just aft of the cabin house and almost directly over and within easy reach of the engine room, making the boat practically controlled by one man. The height of the deck above the water gives the helmsman an unobstructed view to all sides.

There is full headroom throughout the length of the cabin and the space beneath the flush deck provides a large storage space. The fuel and fresh water tanks are also located under the flush deck and are of a capacity ample for a large cruising radius. In case of a storm the cabin may be entirely closed in while in fair weather the many windows in the cabin sides assure plenty of fresh air and ventilation. The boat was built and equipped in the yards of Y. T. Winchester at Broderick.

Osceola will be the flagship of the Sacramento Boat Club during the coming season.

How to Build a Hydro-Runabout.

A Twenty-Footer that will Climb Out and Plane with Thirty Horse Power, but so Designed as to be Easily Driven at Moderate Speeds.

By Frederick K. Lord.

PART II.

The second half of Mr. Lord's article on his hydro-runabout describes the actual construction of this little 20-footer. She is a great little boat; not only will she plane well with but 30 h.p., but she is easily driven at lower speeds or with smaller power and is as seaworthy as any boat of her class. In fact, she has all the essentials of the all-round boat that may be used either for racing or runabout service.—Editor.

BUILDING.

AFTER carefully studying the plans until they are understood, the first step toward building is to lay out the shape of the boat, full size, upon the floor of the shop.

Referring to drawing A, snap a chalk line on the spot when you wish to erect the boat and call this the base line. Exactly two feet away from and parallel to the base line snap another which will be the water line. On the base line measure off 20 feet and every 2 feet erect lines perpendicular to the base. These are where the moulds go when the frame is set up. Proceed to lay off the dimensions from the sketch. All vertical measurements are taken from the base line up. The three sets of figures below the line represent the heights of the sheer, chine and keel lines above the base. In order to draw the stern and stem correctly, supplementary lines and measurements are used, as shown. After the points are determined take a batten of yellow pine, about 22 feet long and 1 x 1½ inches, and spring it to the spots. Be careful in fairing up. If the measurements have been accurately laid out the lines will come fair. To draw the stem use a thin batten ⅛ x ¾ inch, held on edge with wire nails. The sheer line is straight. Draw in the shaft line as shown.

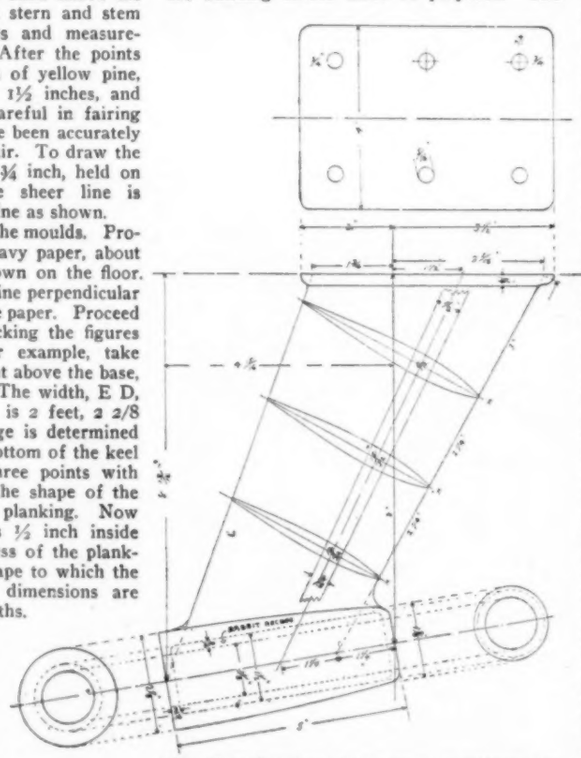
The next step is to get out the moulds. Procure a large piece of very heavy paper, about 5 feet square, and tack it down on the floor. Draw a base line and erect a line perpendicular to the base at the center of the paper. Proceed to lay out the moulds by tacking the figures from plans A and B. For example, take mould No. 4. The sheer height above the base, C H, is 3 feet, 8 6/8 inches. The width, E D, is obtained from plan B and is 2 feet, 2 2/8 inches. The angle at the bilge is determined in the same manner and the bottom of the keel is spotted. Connect these three points with straight lines and you have the shape of the mould to the outside of the planking. Now draw another series of lines ½ inch inside these to allow for the thickness of the planking and you have the true shape to which the mould must be fitted. All dimensions are given in feet, inches and eighths.

The moulds are constructed of ⅞-inch pine in the manner shown in Fig. 1. Lay the pieces down on the paper and after fitting them to the shape, nail together. The transom of ⅝-inch mahogany is laid out from the figures given and the board is steamed and bent over a mould having about 2 inches more round than the transom as it straightens out after being released. About 5 inches round in 3½ feet will do. It should have 3 inches crown when finished. Trim the transom to its lines and screw on, backing pieces or cleats of ¾ x 2-inch oak all around the sides and bottom, ½ inch from the edge. These pieces are the backing for the planking to which it is screwed. Fig. 2 illustrates the point.

The stem should now be worked out. It is to be made of natural crook oak, or hackmatack, 2 inches thick and in one piece shaped according to stem measurements. As it is somewhat difficult for amateurs to cut the rabbet in the stem first, this had better be done after the frame and moulds have been set up, as the rabbet can be cut to true bevel as planks are put on.

The keel remains to be worked out. This is a piece of oak in one length, 1½ inches thick, 4 inches wide inside, 3 inches over rabbet outside and 17½ feet long commencing at mould No. 4 and running aft. The keel is 4 inches wide. From No. 4 running forward it gradually tapers into the 2-inch stem. Fasten the stern and keel together with ¼-inch rods, countersunk in face of stern and riveted over a chinch ring on inside of the stern. Just inside the outer rabbet line, and where it crosses the joint in between keel and stern, bore a ⅜-inch hole through and plug it with a white pine dowel. This is a stopwater to prevent leaks through the joint, the small black dot in drawing C shows the location.

The frame is now ready to set up, but first the building stocks must be prepared. The

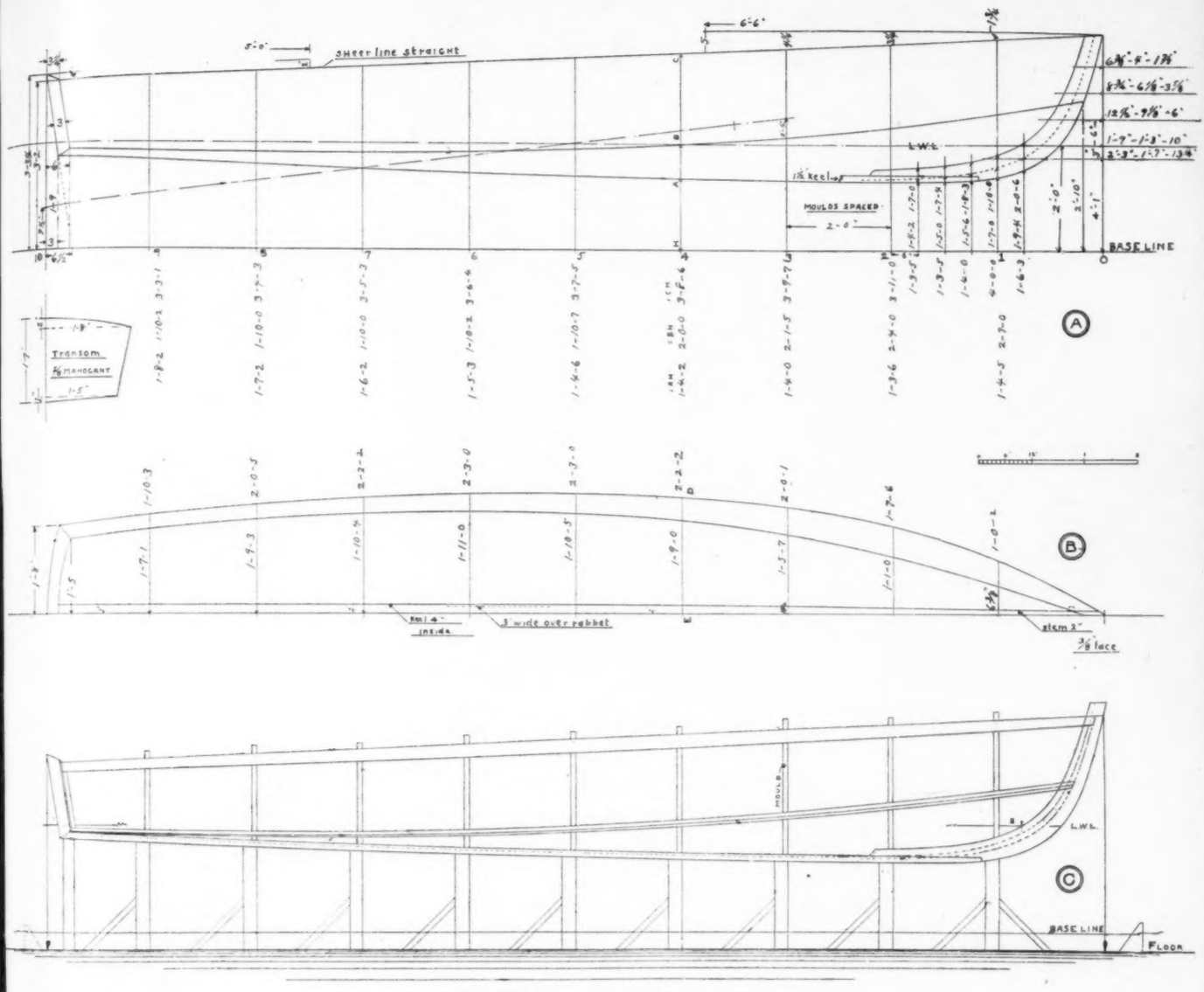


Working drawing of the strut, a pattern for which can be made at home.

posts upon which the keel is to rest are of any rough wood, about 2 x 3 inches, and sawed in 2-foot lengths. Using the load water line of the laying-down plan as the center line upon which the boat is to be built, erect the posts on center line at the intersection of the mould lines and brace them, as shown in plan C and Fig. 1, taking care that they are perfectly plumb and have the forward edges just touching the cross lines. Take a fine wire or line and stretch it perfectly taut and straight about 3 inches above the floor along the posts. Be careful to get this perfectly level as this is the base line from which all vertical measurements are taken during building. Plan C shows the line in position. Now from plan A take the keel heights H A and measure from the wire up on the posts and saw them off at the measurements. The tops of the posts will represent the curve of the keel. Mount the keel and stem on these posts, securing them in place with braces and taking care that the keel center is directly over the center line on floor and that the stern is perfectly vertical. Use a plumb bob for this purpose. Next erect the moulds. Fig. 1 shows the method of erecting and bracing them. When a mould is mounted on the keel, level the upper brace and check this up by dropping a plumb line from the mould center, and seeing that the bob comes in the center of the keel. Check it up also by leveling out the cross mould line from the base line and measuring up the sheer and chine heights S and C. If everything is accurate these measurements will be the same as H C and H B in plan A. Steady the moulds with braces up to the ceiling and others K, running along the cross braces on the tops of the moulds. Secure the transom to the keel with two ⅞-inch oak knees separated about 1½ inches to allow the rudder post to pass between and run them up to the filling piece at top of transom. Plan C and Fig. 1 give an idea how the whole thing in the chine log is next put on. This is of yellow pine, 1½ x 2 inches, let into the moulds and shaped with a ½-inch rabbet, as shown in Fig. 6, to take the planking. Thin it down to about ¾ inch at the bow and let it into the stern. Secure to the moulds with long screws, which are afterwards taken out and the holes plugged.

We are now ready for the planking. This should be of ½-inch cedar, and as the wood can be obtained in 22 feet lengths it is better to use it thin and do away with all butts. Use ten planks to a side, five on the topside and five on the bottom. Take every other mould and divide the space to be planked into five equal parts. These spaces will be the widths of the planks to go on. Begin by getting out the gunwale strake. In order to determine the shape of the plank a method called spiling is used. Take a ⅜-inch cedar board about the size of a plank and clamp it with its upper edge just below the sheer line. With a pair of dividers place one point on the sheer line at each mould and with the other scratch a mark on the board. Remove the board and place it on the plank selected for the sheer strake. Reverse the process and transfer with the dividers the points for the sheer onto the strake. From the spots measure down the widths of the plank obtained from the moulds and we have the spots for the upper and lower edges of the gunwale or sheer strake. Spring a batten through these points and trim to the lines. The plank is now ready to apply. To get the shape of the next plank the ⅜-inch spiling board is again applied just under the sheer strake and the same process repeated. The planking may be either riveted to the frames or screwed on. In either case it makes a much better job to countersink the heads into the planks and plug them with ⅜-inch diameter fine plugs.

Before proceeding with the framing, it is best to determine the water line and shaft angle. For the load water line measure up 2 feet from the base line at inside of both stem and transom. Drive nails and connect ends with a string B, plan C. As the top of the floor line coincides with this it serves as a leveling line and also as a base from which



The "offsets" and method of setting up the frame.

to square up the seats and bulkhead. The shaft angle is determined by measuring up above the base, 2 feet 6 inches at mould No. 3, and 9½ inches at transom, as shown in plan A. Connect these to points with a line running alongside the keel. It is best to put in the shaft hole now. Clamp a piece of wood on the outside of the keel so that the auger starts in it first and then gets a chance to enter the keel right and not drift off. Use a 1⅜-inch auger and guide it with a wooden brace, being careful to get it true with the line. For this job a shaft log made of a metal coating with self-aligning stuffing-box, which can be bought stock, is preferable as it takes up less room and is easy to put in. After the log is in place the next thing is to proceed with the framing.

The bottom frames and floors should be put in first. The bottom frames are of oak, ½ inch wide and 1 inch deep. Cut the frames with a bevel to land on keel and chine log, as shown in Figs. 6 and 7, and fasten with screws. The floors are next put in. These are of oak and vary in depth and thickness according to their position as specified in plan D (Part 1), mould No. 5. They should be well nailed to the keel and riveted to the frames. A ¾-inch cut should be made in the center line for a limber hole. The side framing is now put in the same way, being beveled onto the chine and fastened to the gunwale strake. The frames are ½ inch wide and ⅝ inch deep, except those specified at mould 5 in the above plan. Small oak knees are fitted as shown in Fig. 6 on every heavy frame. This helps to stiffen the angle at the chine greatly. All

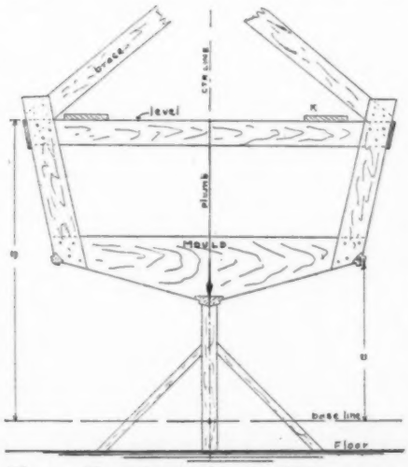


Fig. 1.—How the moulds should be set up.

frames are spaced 6 inches. It is best now to put in the engine beds. They are of 1½-inch oak, shaped as per plan, modified and spaced according to the motor used. Fasten the beds to the floors by riveting clear through to the underside of them. That makes a job that will never work loose. All the work done so far must be executed with care and accuracy as a great deal depends on the thoroughness of these things.

The boat may now be planked. Proceed by alternately putting on a plank at the garboard and then at the topside working both side and bottom toward the chine. The planks should be well fitted and they should touch inside and have a small seam not more than 1/32 inch open on the outside, just enough to allow the boat to be very lightly caulked. After the planking is on, braces are put across the boat about 6 inches below the gunwale, the moulds removed and the clamps put in. They are one piece of yellow pine, ⅞ x 1½ inches amidships and tapering to ¾ x 1¼ inches at the ends. They should run slightly below the sheer line to allow the deck beams to be jogged over them, as shown in Fig. 3. Rivet the clamps through frame and planking. Fig. 4 shows how the clamps finish into the stern and are held by an oak breast-hook, and Fig. 2 illustrates the termination at the transom with hull and backing prices.

The deck beams are now put in. These are of oak, ½ x 1½ inches deep, spaced in every frame and landing on top of and fastened to the clamp and frame heads. The crown of the deck at various places is given in plan A.

Forward the center line cambers down and is not straight. Take a board about 5 inches deep and shape it to this camber. Then support it vertically on the center line 1½ inches low. The deck beams are put in over the top of the board and their under sides must rest on it. This insures an accurate camber, makes the beams fair up and acts as a template and gives rigidity. The length and crown of each beam must be measured off the boat and the arc of a circle swept on the floor, passing through these points. The beam is worked to this arc. White pine filling pieces are put in along the gunwale at the cockpit opening to form a backing for the coamings which should be 3 inches inside the outer edge of the planking.

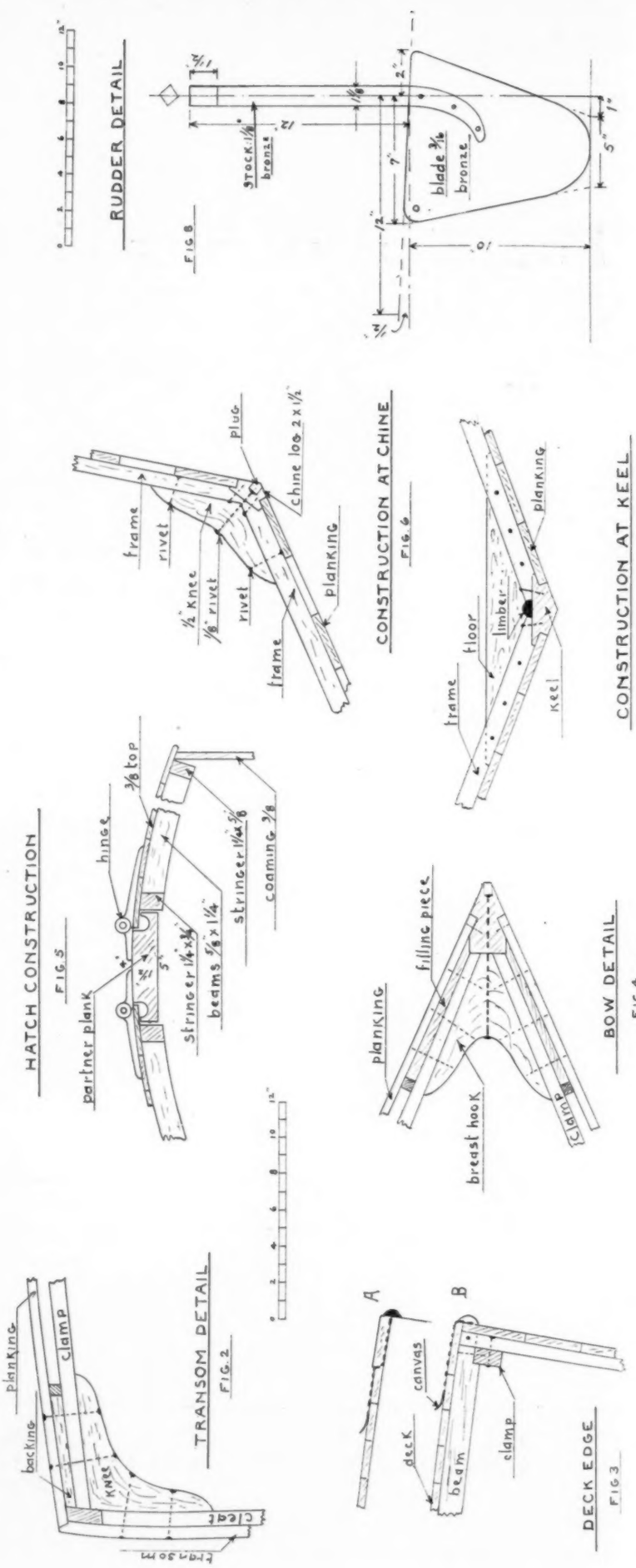
Now is the best time to put in the rudder and the post is shown by Fig. 8. The blade is of 3/16-inch bronze plate and the stock 1⅛-inch bronze, rod split, bent and riveted, as shown. Procure a heavy brass tube, 12½ inches long, and thread one end of it for 2 inches. Bore a hole slightly less than the outside diameter of the tube through the keel, 6 inches from the transom edge and screw the tube into it until it comes flush on the outside. Screw cleats on the frames and run a beam of ¾ x 5-inch oak across the top of the tube, letting it project 1/16 inch above the board, as shown in plan D. Use a 12-inch quadrant and run the tiller lines through 4-inch sheaves to the steering wheel in the usual way.

In order to prevent any chance of water running up the rudder tube fit a little deflecting plate around the forward half of the rudder stock and fasten to the hull. This plate should be about 4 inches long, 2 inches wide and fit around the forward half of the stock about ¼ inch away from the keel. This acts as a hood to prevent the water getting in and just as effective as a stuffing-box and costs practically nothing.

The tank should be installed next. The one shown is 7 inches deep, 24 inches long and 28 inches wide; of 18-ounce copper, with a capacity of 20 gallons. It is mounted on a shelf as in plan D and has a 4-inch filling plate on deck. With some motors it may be necessary to lower the carbureter a few inches to get gravity feed, but if the carbureter float is 6 inches below the bottom of the tank when the boat is at rest, it is sufficient. With the tank in, the deck may be laid. Use ⅜ spruce in strips 2 inches wide. Commence at the center and work out. It will be well to put a 12-inch square hatch between beams 35, 36 and 37 on the after deck in order to get at the strut and steering gear. After the deck is laid give it a very heavy coat of paint and when still wet stretch No. 10 canvas over it. This should be in one piece. Begin by tacking the canvas over the edge at the bow. Then go aft and pull the canvas at the center line as tight as you can and tack it temporarily over the edge of the transom. Return to the bow and tack back to the stern, fastening on each alike. Press the canvas down on the inside of the backing piece in cockpit and then cut away the cloth from the latter. Fig. 3, B, illustrates the way to finish the canvas and cover it with the chafing strip. If a natural finished mahogany plank sheer is desired, as indicated in the plan, it should first be tacked on, the deck laid to it, then taken off and the canvas laid and carried down, as in A, Fig. 3; then the plank sheer permanently fastened. If a bright deck is desired then it should be ½ inch thick and laid in 1½-inch strips.

Put in the coaming. It is of ⅜-inch mahogany, 6 inches wide and stands 3 inches above the deck forward and 2¾ inches aft. Now is the best time to install the motor, put in the shaft and strut and connect up the exhaust. Regarding the latter, a 2½-inch light copper tube running directly out the stern is the best, but it may also be run out the side a few feet aft of the engine. The shaft is 1⅛-inch bronze.

The strut drawing is given in detail with a recess for babbitting it. A pattern will have to be made and a casting taken off. The strut is fastened to the keel with 6 5/16-inch bolts,



Some of the construction details of the 20-foot hydro-runabout.

having flat heads on the outside. After the motor is installed the cockpit floor should be laid. This is of ½-inch white pine, laid directly on the floors in 3-inch strips.

The seat is to be of ¾-inch mahogany stoved up in front with ¼-inch mahogany in 2½-inch strips. The backboard of ⅝-inch mahogany stands above the deck at center about 6 inches and rounds down to the coamings.

The bulkhead may now be put in. This is made by putting in a ¾-inch mahogany crown with its lower edge even with the lower edge of the coaming and stoving the part below it like the seat. There remains but the motor hatch and Fig. 5 shows how this is made. A spruce partner plank 1½ inches thick is run along the center. It is 4 inches wide on top and 5 underneath. Sutters are cut, as shown, to catch the dip. The top of the lids are ⅜-inch mahogany laid in 12-inch strips and lightly caulked with a thread of candle wicking. The dimensions of the frame are given in the sketch.

The hull above water should have three coats of white paint, the deck three of buff, the bottom two of light green and all bright wood three coats of good spar varnish. For hardware put on bow and stern chocks, flag-pole sockets, a 7-inch cleat aft and a 9-inch forward and a 4½-inch ventilator, all of brass. This completes the boat, and may she live up to the expectations of her builders.

The A. P. B. A. Rules for 1912.

Hydroplanes to Race in Their Own Classes Based on Length, Protecting the Displacement Boat. Changes in the Definition of a Cruiser, Open Boat, Racer and Hydroplane.

AT a special meeting of the council of the American Power Boat Association, held May 14, 1912, action was taken on several points that were left unfinished at the annual meeting of the association last February. Among these were the definition of a cruiser, open boat, racing boat and hydroplane and the consideration of a new constitution which was submitted to the council and as amended by them will be voted upon at a general meeting of the association to be held in New York City, June 12th.

President Koerner presided, with the secretary, treasurer, measurer and chairman of the Thousand Islands section in attendance. Under the rules adopted by the council any boat is eligible to compete against the hydroplane, but the latter is not permitted to enter the same class as the cruiser, open boat or any other displacement boat.

Hydroplanes are divided into four classes, in accordance with their overall length, as follows: 20 ft., 26 ft., 32 ft. and 40 ft. classes. Any boat will be permitted to race in the next higher class, but in the future no boat will be allowed to compete in the next lower class without the mutual consent of the owners of all competing boats. This ruling protects the smaller boat from unjust handicapping and also gives them a chance to compete with the larger boats if they so desire.

Seniority of the vice-presidents of the association was decided by giving the oldest section the right to the first vice-presidency and continuing down the line, according to the date of application for admission of the section. This establishes the date of entry and gives the oldest sections the right of seniority according to experience. The office of fourth and fifth vice-presidents was left vacant, pending the application from two sections which are now forming.

The deed of gift of the Gold Challenge Cup was altered to allow any boat between 20 and 40 feet to enter. Heretofore the lengths have been restricted to between 32 and 40 feet. The race will be held this year on the St. Lawrence River, August 1, 2 and 3.

The date of the annual meeting was changed from February to November, as it was felt that February was too near the racing season to allow members to build new boats to comply with the changes in rules. The new date will give owners six months to prepare for the racing season.

Probably the most important matter considered at the meeting was a question of forming a National Commission, to have full jurisdiction over all motor boat racing events in the country with duties and powers not unlike those which the Amateur Athletic Union exercises over athletic events on shore. Secretary Whitaker was instructed to write to the secretaries of all clubs in the association, asking for suggestions relative to such a commission.

The officers of the American Power Boat Association, during the past two years, have devoted most of their energy toward increasing the club membership in the association in order to form a strong and representative body, and in this respect they have been very successful. However, the powers of the association being advisory only, have been rather limited, and it has been impossible for it to exercise the proper supervision over racing events. The idea of an independent racing commission with full powers, suggested recently, provided it has the proper personnel, is an excellent one, and should raise the standard of racing in this country.—Editor.

While the details were not decided upon, it was the idea of the meeting that from ten to fifteen members should constitute this commission, its members to be elected annually by the association. Some of the duties of the body will be the sanctioning of all races, keeping records of the speeds made by every boat, full particulars as to the dimensions and power of the boats, and the appointment of capable measurers authorized to rate and handicap boats. Questions of dispute relative to racing and the eligibility of boat and crew would be submitted to the commission for rulings, as would many other matters that naturally should come before a governing body. Probably the lack of such a body is the chief reason for the state of chaos that the motor boat racing is now in and the commission should be able to bring about wonderful improvements by organizing the sport.

Boats will hereafter be divided into four divisions, defined as follows:

Division 1, cruisers.—A cruiser is a power boat with permanent berths, fixed and sanitary plumbing, cooking arrangements and outfits necessary for living aboard, cabin entirely closed in with either flush-deck or self-bailing cockpit. The coaming on any non-watertight hatch, on any flush-deck or cockpit, shall be at least 6 inches high, cabin to have headroom in clear equal to 16 per cent. of overall length of boat up to 6 feet headroom. This headroom to extend for at least one-quarter the length of the boat and for one-quarter of the maximum beam. Fuel to be carried in fixed tank or tanks, fresh water carried in fixed tank or tanks and full equipment as required by law and effective ground tackle shall be carried when racing. Small boats and other equipment as advertised by the race committee, shall be carried and all boats shall start in order of the handicap.

Division 2, open boats.—An open boat is one whose rating is not over 12 times the square root of its waterline length and includes all boats not in divisions 1, 3 and 4. In racing, boats with standing cabins, shelter cabins and strictly open boats shall be subdivided into separate racing classes when the number of entries warrant it. All boats shall be started in order of their handicap.

Division 3, racers.—A racer is a boat whose rating is greater than 12 times the square root of its waterline length, but where a boat rates both as a cruiser and open boat, owing to the two-horsepower ratings and different method of obtaining the midship sectional area, she shall be classified as a racer. Racers to start in order of their handicap.

Division 4, hydroplanes.—A hydroplane is a racing boat whose propeller acts in or against the water and which has *one or more* of the following characteristics:

A, one or more breaks in the longitudinal continuity of immersed surface or an underbody having one or more applied lifting surfaces.

B, an area of immersed transom exceeding 50 per cent. of the immersed midship section taken at 50 per cent. of the waterline length.

C, a rating of more than 16 times the square root of the waterline length.

Hydroplanes shall be divided into four classes, for the purpose of scratch racing, as follows: 20 feet and under overall length, 26 feet and under overall length, 32 feet and under overall length, and 40 feet and under overall length. In handicap racing, hydroplanes shall race separate from other racing boats and shall be rated and handicapped according to the rating formula and handicapping table used for other racing boats.

Cruisers are to be measured with only two persons aboard and such supplies and fuel, etc., as are passed by the measurer as being usual or necessary. Open boats when measured shall have on board two persons only but shall be stripped of all outfit, tools, etc., and shall have in their fuel tanks a maximum of one-half gallon of gasoline per rated horsepower. Racing boats shall be weighed without crew and stripped of all outfit, tools, etc., and shall have in their fuel tanks a maximum of one-half gallon of gasoline per rated horsepower. To the scale weight of racing boats shall be added 300 pounds in lieu of crew, and if the combined weight of the crew does not come up to the 300 pounds a balance to bring the crew weight to that amount shall be added.

The formula for determining the area of the midship section in racers and hydroplanes was changed, the new formula being

$$M\ S = \frac{W}{1000}$$

where W = the actual weight of the boat in pounds and M S = the area of the midship section in square feet.

The Diesel and Its Use in Boats.

A Brief Account of the Development of this Heavy Oil Engine—The Two and Four Stroke Types—How It Has Invaded the Marine Field and With What Success.

By Dr. Rudolf Diesel.

Honorary Member American Society of Mechanical Engineers.

Almost any well-designed gasoline engine will, with some slight carbureter changes, run successfully on kerosene, but in order to use crude oil directly, complete and radical changes in design are necessary. Even after this problem had been solved and the Diesel engine had proved successful in stationary practice, it was a number of years before the further obstacles of design and prejudice were overcome in the marine field. Since its advent, however, its success has been a sweeping one and already it bids fair to revolutionize marine engineering. We have been very fortunate in securing a personal interview with Dr. Diesel during his recent visit to this country and in obtaining the story of this great development first hand.—Editor.

DR. RUDOLF DIESEL.

SINCE its first appearance in 1897, the Diesel engine has been built by the thousands in the best factories of all industrial countries. It has proved to be the most reliable engine when properly built, and to-day its thermal or indicated efficiency reaches 48 per cent. and the effective or brake efficiency reaches in some cases 35 per cent. of the heat value of the fuel.

The Diesel engine is one which converts the heat of the natural fuel into work within the cylinder itself without any previous transformation and which utilizes it as far as the present standard of science permits. It is therefore the simplest and at the same time the most economical prime mover.

At the Turin Exhibition last year a steam turbine and a large Diesel engine were set up on the same bed and worked together with the same liquid fuel. The boilers belonging to the plant were fitted with Koerting nozzles for burning crude oil. Aside from the extensive apparatus and auxiliaries that had to be provided for the steam plant the final results showed it consuming 2½ times the fuel per horsepower required by the Diesel engine standing beside it. The latter being an entirely independent engine without any auxiliary plant, took up its crude oil fuel automatically and consumed it without either residue or smoke.

As early as the year 1899 I utilized in my experimental engine the by-products of coal distillation and coke plants, such as tar and creosote oil, with the same satisfactory results as with the natural liquid fuels. New petroleum sources are continually being developed and new oil districts discovered, and, moreover, it has been proven by recent geological researches not only that there is on the globe as much, or perhaps even more, liquid fuel than coal, but that it is more conveniently distributed as regards its geographical position. Even if mineral oil were the only source of oil fuel it would be possible to operate the combined mercantile and naval fleets of the world on about 40 per cent. of the present production of mineral oil in the world. The present production of tar in Germany alone is sufficient to provide liquid fuel for Diesel engines of 1,750,000 horsepower for 300 days a year, working ten hours a day, which is equivalent to more than 7,000,000 tons of coal a year used in coal burning plants. It is also possible to use vegetable and animal oils in the Diesel engine without any difficulty. This fact may seem insignificant to-day, yet it makes certain that motive power can be produced from the heat of the sun, which is always available for agricultural purposes, even after all our natural stores of solid and liquid fuels are exhausted. Oil made from the American peanut has proven a good fuel and a satisfactory lubricant.

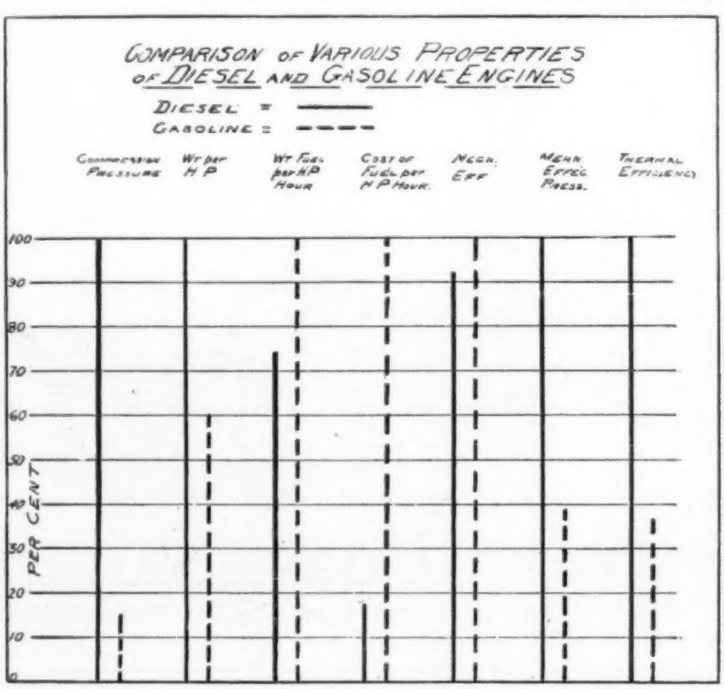
My first engine was constructed in 1893 but never succeeded to run, not even one revolution, but at the first injection of fuel there occurred a terrible explosion, nearly killing me. But I knew then just what I wanted: it was possible to compress pure air to such a higher degree that the fuel injected into it ignited and burned.

The first reliable and complete Diesel engine was finished and completed in 1897 at Augsburg, after four years of laborious experimenting. It was of 18 h.p., vertical, four-stroke cycle type. Units of from 10 to 250 h.p. per cylinder were constructed after this pattern and units up to 1,000 h.p. were obtained by combining several cylinders. These engines ran at comparatively slow speeds of 160-200 r.p.m., and were of heavy construction. Since that time rapid development has been made in small, light-weight units and to-day we have several complete 5 h.p., one-cylinder plants, designed for 600 r.p.m.

The Diesel principle is essentially suitable as a two-stroke cycle as well as a four-stroke cycle engine, because scavenging is not done with the fuel air mixture, but with pure air, so that not only untimely ignitions but also fuel losses are avoided and the scavenging can be done more effectively and with almost any quantity of air desired. To-day the two-stroke cycle type is on a nearly equal footing with the old four-stroke cycle. I say "on a nearly equal footing" because the four-stroke cycle engine has a better combustion and more economical fuel consumption, and is above all simpler in its method of working. The first marine Diesel engine was of 20 h.p. and was constructed in 1902-1903 in France for use on a canal boat by the French engineers, Adrian Bochet and Frederick Dyckhoff, in conjunction with myself. This engine had two pistons working in opposite directions and worked on the four-stroke cycle. Since that date the evolution of the Diesel marine engine has steadily continued chiefly on the demand of French submarines and Russian river boats. The first reversing marine Diesel engine of the two-stroke type was built in 1905 and of the four-stroke type in 1908. On the whole, for navigation purposes, engineers are inclined to abandon the four-stroke cycle engine entirely and to replace it by the two-stroke cycle engine. The four-cylinder engine of 30 h.p. with a speed of 600 revolutions per minute, built for experimental purposes, has proven the practicability of such an engine for small boats and yachts.

Although several of the engines on the Diesel liners are four-stroke engines, yet it appears probable that the large ship engines will develop on a two-stroke cycle and with exactly the number of revolutions required by the propeller. There is a tendency to make these engines resemble steam engines as nearly as possible, even in those points where it would not be necessary, because the marine people adopt new things very much easier when they look like something they have been accustomed to.

The Diesel marine engines are now built with cylinder units reaching 2,000 h.p.,or more, some double-acting, others with single-acting cylinders, but all on a two-stroke cycle.



The total aggregate of Disel-propelled ships to-day is about 365, distributed about as follows:

Oil vesels, about 30.
Tugs, about 40.
Motor sailing vessels, about 10.
Merchant vessels, about 50-60.
Fishing boats, about 15.
Submarines, about 140.
Small warships, about 40.
Small marine craft, about 20.

The first American-built vessel to be be propelled by Diesel power is now building at the Staten Island Shipbuilding Company's yards at Port Richmond, Staten Island, and its machinery is being built by the New London Ship & Engine Company, at Groton, Conn., for the Standard Oil Co. The vessel is 200 feet overall length by a 35-foot beam. The engine is of the two-cycle type with six working cylinders, start-

ing and reversing being accomplished by compressed air and ignited by the heat of the fresh charge of air compressed in the working cylinder during the upstroke.. The cylinders are of 9 1/16-inch bore by 15¾-inch stroke, developing 300 h.p. at 300 r.p.m. On their trials the engines actually develop 374 h.p. at 300 r.p.m. with a fuel consumption of one-half pound per horsepower hour.

"Venoge," one of the very first small cargo boats on Lake Geneva, is fitted with non-reversing Diesel engines, driving the propeller electrically. The captain maneuvers his ship only by electrical contacts, the motor running below without engineman.

"Uto," a passenger vessel on Lake Zurich of 200 tons displacement and 200-260 h.p. is a converted steamer. The following table shows her performances both before and after being equipped with Diesel engines:

	Equipped with Steam.	Equipped with Diesel Engines.
Power of Plant	125 h. p.	250 h. p.
Weight of Plant and Fuel	14.16 tons	9.6 tons
Sailing Radius	64.6 miles	646 miles
Cost of Fuel	1 unit	¼ unit
Saving in Cost of Fuel per K.M.		$0.105

"Toiler," the first Diesel seagoing vessel, had a cargo capacity for 3,000 tons and was equipped with a 360 h.p. Diesel engine. The oil consumption at full speed amounted to 1.65 to 1.75 tons per 24 hours. A steamer of the same size consumes 8 to 9 tons of coal per day or about 6 times as much as the ship equipped with the Diesel engine. The saving in cost of fuel amounts to 50 per cent. while the gain in cargo carrying capacity amounts to 60 tons. The saving in cost of fuel amounts to $11 per day and in labor, $5 per day. The following table represents the economy of Diesel power in a destroyer of the Paul Jones type of 400 tons displacement and 8,000 indicated horsepower:

	Steam.	Oil.
Weight of engines, pounds	449,000	317,000
Weight per B. H. P. pounds	64	44
Radious of Action at 10 knots and 180 tons fuel, miles	1,700	10,000
At 28 knots and 180 tons fuel, miles	630	2,950
Fuel per B. H. P. hour at 20 knots, pds.	2.34	0.5
Engineers and stokers	54	21
Fuel consumption in one year, 20,000 miles	2,100	360
Cost of fuel	3,840	924
Cost of engine crew labor	4,500	1,920
Cost of repairs	2,000	400

The first Diesel engine propelled ship to cross the Atlantic made her first voyage from Rouen to New York and back in 1911. The engines worked 1,200 hours at a cost of $1 per hour per engine. She took on fuel in New York City at the cost of about $7.50 per ton. The polar ship, Fram, was converted from a steam-driven ship to one propelled by Diesel engines with a gain in engine space of 45 per cent.; in weight of engine, 60 per cent.; in weight of fuel, 80 per cent., and in fuel space, 85 per cent. Explorer Amundsen, in one of his brief messages sent upon his return to civilization from his recent successful attempt to discover the South Pole, noted the fact that his Diesel engines gave him absolutely no trouble during the trip.

The standard practice for the four-stroke cycle type of Diesel engine is to make the ratio of bore and stroke about 1:1.5, while with the two-stroke type it is nearer 1 to 1. This does not differ materially from the practice in the gasoline engines. Some very successful lightweight engines have been made with an average weight, complete, of about 30 pounds per horsepower. While this is considerably in excess of the very light gasoline engines used in the modern racing boat and hydroplane, yet no attempt has been made to compete with the latter type of engine. The Diesel is necessarily a heavy engine and its entire superiority over the gasoline engine lies in its fuel economy only.

The pressure of 500-700 pounds per square inch is obtained at compression and liquid fuel is injected into the cylinder at a pressure of 900 pounds per square inch. This is started a trifle before the end of the upstroke and continues for a part of the working stroke, combustion taking place without explosion at nearly constant pressure, thus avoiding the shock resulting from an explosion which means much longer engine life. A mean effective pressure of about 115 pounds per square inch, or twice as much as in the gasoline engines, enables large units to be built with much saving in cylinder dimensions.

The fuel consumption amounts to from .4 to .5 of a pound per h.p. hour, which is equivalent to about ½ pint per h.p. hour. Fuel costs about .4 of a cent a pound in New York City, or less than .2 of one cent per horsepower hour. The fuel having a much lower flash-point is many times safer and is not much heavier per unit volume than gasoline.

Trial of the 20-Foot Elco-Plane.

Another of the Rival 35-Milers Makes Good Her Speed Guarantee.

THE photograph below illustrates a 20-foot Elco-plane, owned by Commodore August Heckscher, on its recent trial trip at the works of the builders, Bayonne, N. J. This boat is 20 feet in length, 4 feet 8 inches beam, and is equipped with a 60 h.p. 6-cylinder Elco gasoline engine. It was exhibited at the New York Motor Boat Show, where it attracted a great deal of attention.

The Elco-plane is a distinctly new type of hydroplane on which the company has applied for a patent. It has been their experience that hydroplanes having the steps built into the hull are likely either to be quite heavy or structurally weak. With this construction, however, the bottom planking of the boat can be made continuous. The planes are attached to the bottom of the boat and form steps on which it runs when planing. These planes are made of thin bronze plates and have a corrugated section, giving them great longitudinal strength and forming a surface having a maximum resistance to any side motion.

The slightly flaring sides of the boat and the continuous engine bearers form, with the continuous bottom planking, a girder having exceptional longitudinal strength.

Watertight bulkheads are provided fore and aft, dividing the boats into three compartments, any two of which have sufficient displacement to float the boat in case of accident. The fastenings throughout are of copper and bronze. The decks and interior woodwork are finished in selected mahogany.

The first trial trip of the Elco-plane took place on Saturday, May 11th, when the boat proved herself not only wonderfully fast, easily exceeding her guaranteed speed of 35 miles, but remarkably seaworthy and free from pounding. The boat when carrying four passengers, rises on her planes within five seconds from a standing start. To illustrate her stability when at rest, it required a weight of 700 pounds on the coaming to heel her down to the gunwale. The shifting of two people from side to side when the boat was planing does not give any apparent list.

What impressed a casual observer the most was the boat's ability not only to handle well at high speeds but also to handle perfectly when at low speeds, the boat backing readily to either starboard or port and being under perfect control at all times. One of the characteristics most noticeable is the dryness of the boats; when planing the freeboard is materially increased and absolutely no water comes aboard, even when running with the wind abeam.

The boats are not designed primarily for racing but for high-speed yacht tenders.

Commodore August Heckscher's 20-foot Elco-plane making good her speed guarantee. No difficulty was experienced in getting her to plane with four people in the cockpit.

The LONG DISTANCE RACES for 1912

Eronel II, owned by Samuel Cochrane, winner of the last Bermuda Race.

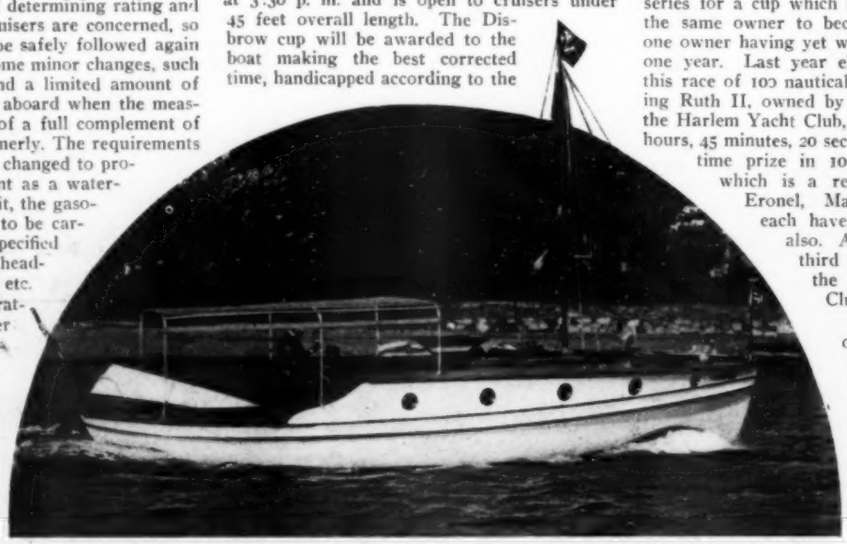
Five years ago the Marblehead and Bermuda Races were the only long distance contests of note for motor boats. Today the longer events are so numerous and the conditions so attractive that such races are fast displacing the short triangular ones in popularity even for small open boats. With proper preparation these events have considerable educational value for both the crew and designer, and many features of the designs of modern cruising power boats are directly traceable to some successful ocean racer. Here's to the success of long distance racing!—Editor.

THE unrest that is so manifest at present in regard to the handicapping rules governing contests of speed between high-powered displacement boats and hydroplanes is apparently having no effect whatsoever on the plans for the long distance races for the season which is nearly at hand. The committees having these popular races in charge are hard at work on the details and in general the dates have been announced and full particulars issued. There is no falling off in the interest in these tests of endurance as well as seamanship and as the American Power Boat Association's handicapping rules have proven very efficient when applied to races between cruisers with a few exceptions, it seems probable that they will again be almost universally used.

The 1912 rules will hardly be issued in time to be of much value this year, owing to the lateness of holding the annual meeting of the association and the necessary time required in printing and distributing the year books to the association members. This difficulty will be overcome in the future, however, by a change in the by-laws, providing for the annual meeting in the Fall instead of in the Spring as heretofore, a change which will surely be a welcome one. There is practically no difference between the 1911 and the 1912 rules in the actual method of determining rating and handicaps, as far as cruisers are concerned, so the former rules may be safely followed again this year. There are some minor changes, such as: only two people and a limited amount of fuel and supplies to be aboard when the measuring is done, instead of a full complement of crew and stores as formerly. The requirements of a cruiser have been changed to provide for such equipment as a watertight self-bailing cockpit, the gasoline and water supply to be carried in fixed tanks, a specified minimum amount of headroom in the cabin, etc.

The distinction in rating between the cruiser and "racing boat" remains the same, that is, a cruiser must rate less than 12 times the square root of its load waterline length. Allowing for such a high rating in a cruiser is all right provided the classes are limited in the range of allowable rating so that boats of too great a difference in rating will not be compelled to race against each other. If cruisers of widely different ratings compete against each other in the same class, the same condition will arise as when speed boat and open boat are brought together. All of the old "classics" are again on the schedule this year in addition to several new long distance races over courses which should prove popular ones.

The Tappan Zee Yacht Club breaks into the ranks of long distance races this year by the establishment of a race from their clubhouse at Grand View on Hudson to the city of Hudson and return, a distance of 180 statute miles. This race is scheduled for June 22nd, starting at 3:30 p. m. and is open to cruisers under 45 feet overall length. The Disbrow cup will be awarded to the boat making the best corrected time, handicapped according to the 1911 American Power Boat Association Rules. The Tappan Zee Yacht Club will offer a cup for the boat finishing second and suitable medals to the next four boats finishing according to corrected time. A time limit of 27 hours has been set for this race, but boats to come within the time limit will only have to average about 6.7 statute miles per hour.



Ruth II, owned by W. B. Burroughs, winner of last year's Block Island and Stratford Shoal Races. She is equipped with a 20-h.p. Ralaco engine.

On July 6th at 4 p. m. the Colonial Yacht Club will start a race from their clubhouse at 140th Street and Hudson River to Cornfield Reef Lightship and return, a distance of 183 nautical miles. This is a new race also and is a competition for five prizes offered by Senator C. C. Hunt. The race is open to cruisers of between 25 and 50 feet overall length, having a waterline beam of not less than one-fifth of their waterline length, all boats racing in one class. The time limit of 30 hours has been fixed for this race with entries closing June 20th. Certificates of measurement by the measurer of any club will be accepted if made according to the 1911 A. P. B. A. Rules. At least two amateurs must be aboard each boat during the race.

Another race which is scheduled for June 22nd is the Annual Race of the New York Athletic Club, from Huckleberry Island, off New Rochelle Harbor to the new harbor at Block Island. This race is the fifth in the series for a cup which must be won twice by the same owner to become his property, no one owner having yet won the race more than one year. Last year eleven boats started in this race of 100 nautical miles, the winner being Ruth II, owned by W. B. Burroughs, of the Harlem Yacht Club, and her time being 12 hours, 45 minutes, 20 seconds. Thistle won the time prize in 10 hours, 50 minutes, which is a record for the course. Eronel, Martha and Elmo II each have one leg on the cup also. Appropriate second and third prizes are offered by the New York Athletic Club.

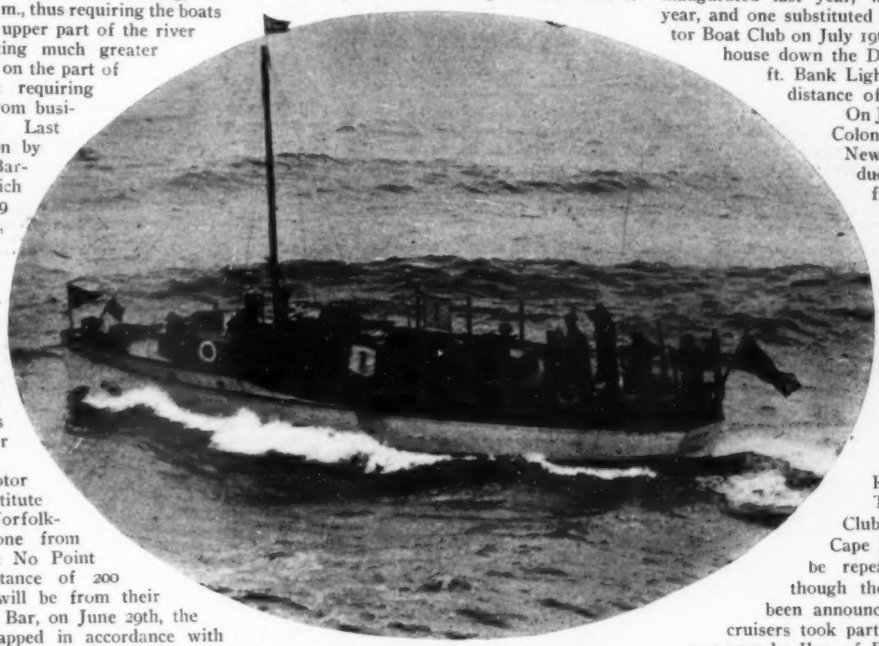
The popular annual open race of the New York Motor Boat Club, from New York to Albany and return is scheduled this year to start at 10 a. m. on June 29th. This is the fourth season of this event which has constantly gained in popularity. Last year 23 boats got

over the starting line, more than any other long distance race in the country and even a greater number should start this year, as there are practically no limitations as to crew, equipment or other particulars that would tend to keep those who are other than professional mug hunters out of a race. Both cruisers and open boats under 40 ft. overall length are eligible for this race and a prize is awarded to every boat covering the 235 nautical mile course in 40 hours or less. The start, which in previous years has been in the evening, has been changed to 10 a. m., thus requiring the boats to be in the narrow upper part of the river at night, necessitating much greater navigating alertness on the part of the helmsman but requiring less loss of time from business than before. Last year's race was won by Commodore E. E. Barney's Monreve, which made the run in 29 hours, 36 minutes, 18 seconds. The record time for the course was made in 1911 when Excelsior made the trip in 27 hours, 56 minutes, with Thistle less than 3 minutes behind her, a difference of less than one second per mile.

The Maryland Motor Boat Club will substitute this year for their Norfolk-Baltimore Race, one from Baltimore to Point No Point and return, a distance of 200 miles. The start will be from their clubhouse, at Ferry Bar, on June 29th, the boats being handicapped in accordance with this year's A. P. B. A. Rules and will be divided into three classes, as follows: Class A boats, rating over 50; Class B, rating 50 and under 40; Class C, rating under 40. The first prize in each class will be a Sterling silver cup valued at $100, with second and third prizes if a large enough number of boats start. Thirteen entries have already been received for this race, which, from all appearances, should be a record breaker.

One of the most important western races this year is the Vancouver-Tacoma Race for cruisers, starting July 1st. Captains will be allowed to choose their own starting time between 10 a. m. and 4 p. m., to take best advantage of the tides. The course will be down Pt. Angeles Harbor around Pt. Wilson, down Colvas Passage west of Vashon Island, up the east side of the Island and then down Colvas Passage again, finishing the course of 220 miles at the Tacoma Yacht Club. Several entries have already been received and a dozen new boats are building especially for this race, several among them being Hong Kong built boats. Last year Commodore B. F. Jacobs' Corsair won both the handicap and time prizes.

The Yachtsmen's Club, of Philadelphia, have two important cruising races on their hands this year, the most important of which is the Bermuda Race. After a lapse of two years since the last race, it seems as though the idea of shifting the scene of the starting point from New York, where the previous four Bermuda Races have started from, to Philadelphia, would bear fruit. This race is open to cruisers between 40 and 100 feet overall length. The Yachtsmen's Club have always had the reputation of being hustlers and it



Ilys, one of the most consistent winners ever built. Last year she won the Cape May, Wilmington-Wildwood and the Yachtsmen's Club Ocean Races besides several short events.

seems probable that when the starting gun is fired on July 27th for this race, several boats will be off on their 700-mile ocean run; in fact, eight entries have been received to date. The last time the race to Bermuda was held was in 1910, when the start was from the New York Motor Boat Club, the race being won by Eronel II, owned by Commodore Cochrane, of the Bensonhurst Yacht Club. Her time was 87 hours, 29 minutes. The fastest time for the course is 65 hours, 39 minutes, made in 1907 by Ailsa Craig and each succeeding year the elapsed time has been slower than the year previous. The Bermuda Race is for a cup, donated by James Gordon Bennett and a cash prize of $1,000. The cup must be won three times by the same owner to become his property and has been competed for three times to date; the 1907 race being for another trophy which was also donated by Mr. Bennett.

The Yachtsmen's Club will also handle a race this year from Atlantic City around Winter Quarter Shoal Light Ship and return, starting Saturday, July 6th, open to all cruising boats which will race in two classes: those rating over 40, in Class A and those under 40, in Class B. Besides first and Second prizes in each class a handsome shield will be presented to each boat that covers the 178 nautical mile course in less than 36 hours.

The Camden-New York Race, which was inaugurated last year, will be omitted this year, and one substituted by the Camden Motor Boat Club on July 19th from their clubhouse down the Delaware River to 14 ft. Bank Light and return, a distance of 146 nautical miles.

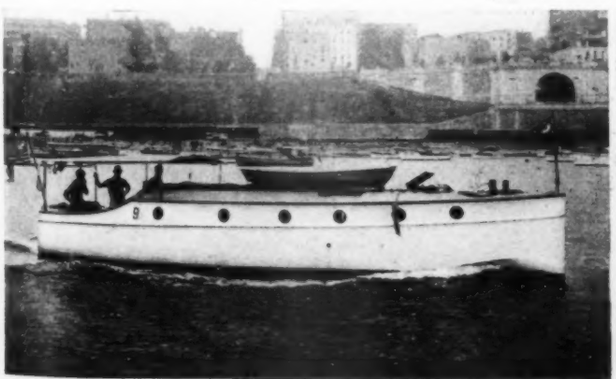
On July 27th and 28th the Colonial Yacht Club of New York City will conduct an open race from their quarters on the Hudson to Poughkeepsie and return, a distance of 130 statute miles, allowing an all night's stop at Poughkeepsie. This race will be open to cruisers and handicaps will be based on the 1911 American Power Boat Association Rules.

The National Yacht Club's annual race to Cape May and return will be repeated this year, although the date has not yet been announced. Last year, five cruisers took part in this race, which was won by Ilys, of Bermuda fame, in 34 hours, 51 minutes, the course being 381 miles in length. The race to Fire Island Lightship and return is again on their schedule and a new race in conjunction with the Yachtsmen's Club, of Philadelphia, to Hampton Roads is contemplated, but the date has not been definitely settled as yet.

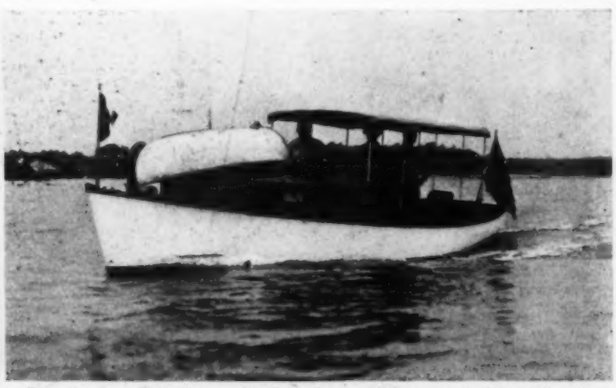
The Scripps' Reliability Cruise will be held this year August 1 to 7, starting from Detroit and finishing at Hamilton, Ontario, in time for the Third Annual Regatta of the Great Lakes Power Boat League, which will be held under the auspices of the Royal Hamilton Yacht Club, August 8, 9 and 10.

No dates have yet been fixed for the Marblehead Race or the Lake Erie Long Distance Race. Both the New Rochelle Yacht Club and the Harlem Yacht Club last year conducted motor boat races around Stratford Shoal Light and return and it is probable that these races will be repeated this year as each of them had a fair number of entrants, although there is no definite information forthcoming as yet.

Last year's races around this mark were won by Classic and Ruth II.



Chelwood, winner of the 1911 New York-Camden Race, in addition to many races on the Delaware. She is owned by Rufus Lenig, of Philadelphia.



Classic, owned by James Craig, winner of last year's Marblehead Race. She is only 30 ft. long and is equipped with an 8-h.p. Craig engine.

What Happened at Monaco.

Continued from Page 5.

conditions, it was not surprising that Ursula's average speed was slower than two years ago.

If there was not an improvement in the speed of the racers over the mile and kilometer, it was due to the fact that instead of running the two in a straight line, a hairpin course was adopted, with a straight run for the nautical mile, a turn, and another straight-away for the final kilometer. In the elimination Sciata beat Ursula, to the delight of the vociferous Italian element, Nautilus X coming in third and Saurer I fourth. The final brought together Sciata, Ursula, and the two hydroplanes Motocratie and Sigma III. Motocratie took the lead over the mile, with Sciata only a couple of lengths astern. Ursula had made a poor start, and although she doubtless would not have won if she had got over the line with the others, she would certainly have bettered her position. There was a fine run over the final kilometer betwen Motocratie and Sciata, but the two Panhard engines were more than a match for the single Fiat, and with a lead of about three lengths Motocratie won the prince of Monaco's cup, valued at $2,000. Sigma III did not appear to be in a good mood, and finished a poor fourth.

In the cruiser section for the same race, the preliminaries resulted in practically a dead heat between Mais-Je-Vais-Piquer and Nautilus, the two being qualified for the final, where they had to meet Gavroche, a smaller cruiser. Although both hulls and motors were exactly alike, Nautilus X had a better turn of speed, finishing with eight seconds lead on Mais-Je-Vais-Piquer, and easily bettering last year's time for cruisers. Gavroche was a poor third.

There was not much of interest in the two small cruiser classes and in the 60-foot cruiser class. Among the numerous small boats Hispano-Suiza stood out prominently, having no difficulty in defeating all comers and in bettering her own time of a year ago. In the second series cruisers, Gregoire VIII and Gregoire Peau Rouge were the leading boats, and were so much faster than the others that there was nothing of interest in the races. Cocorico II and Gama were the leading boats in the 60-foot cruiser section, but although both proved themselves good sea boats and carried an interesting type of Brasier long stroke motor, they were not as fast as last year's Chantecler.

A very interesting display was made by the English 21-footers, built under the rules of the British Motor Boat Club. The way they went out in all weathers was really surprising, several of them being running on one occasion when the committee called the race off on account of its danger. Unfortunately they had to compete entirely among themselves, and in the championship provided for them Dyack proved itself the fastest boat. It is intended to make an important feature of the 21-foot class next year.

The boat races were preceded by such successful hydro-aeroplane trials that it has been practically decided to make the tenth annual meeting next year a combined motor boat and hydro-aeroplane competition, the two types of machines running on alternate days. This year the flying machines, starting from and skimming over water, were too much of an experiment for there to be any real competition, but the display was both interesting and convincing. Throughout the fortnight of the boat races Eugene Renaux, with a Maurice Farman biplane, made flights over the bay, carrying photographers, cinematograph operators, and passengers of note.

Results of the Ninth Annual Regatta at Monaco.

Elimination, "Omnium Race," for cruisers and racers. First in each series to run in final handicap. One round, distance 3.88 land miles.

	Elapsed time.
Hispano-Suiza (first series cruiser)	11.50
Gregoire VIII (second series cruiser)	9.38⅖
Gavroche (third series cruiser)	7.40
Saurer-Lurssen (fourth series cruiser)	6.32
Cocorico (fifth series cruiser)	9.20
Sigma III (hydroplane)	7.13⅕
Ursula (racer)	5.56

Handicap, "Omnium Race," for cruisers, racers and hydroplanes. Two rounds, distance 7 7/10 miles.

Hispano-Suiza	18.20⅗
Cocorico	14.51
Saurer-Lurssen	12.15⅕
Gavroche	14.33
Sigma III	17.07⅖
Ursula	10.57⅗
Gregoire VIII	17.49
Fastest time last year: Maple Leaf II	14.24⅕

Championship for English 21-foot class. Three rounds, distance about 10 nautical miles.

Dyack	31.44⅖
Cordon-Rouge	33.17⅗
Fugi-Yama	33.27⅕
Tadpole	33.38
Vicuna	Abandoned
Angela	Abandoned

Not run last year.

International Sporting Club Prize for cruisers with single cylinder motor of 3.9 ins. bore or equivalent, weight 1433 pounds; distance 8 rounds, 31 miles.

Hispano-Suiza	1.16.03⅖
Excelsior	2.16.50
Mistinguett	3.17.47⅗
Amaryliss	3.28.19
Aurore	3.54.10⅖

Average speed, 20.1 knots.
Last year's winner: Hispano-Suiza..... 1.42.19⅘

Prix de Monaco, for hydroplanes, 8 rounds, 31 miles.

Sigma III	49.04⅗
Motocratie	49.20⅘
Pistil	1.05.29⅗

Average speed, 33 knots.
Last year competed for by 49-footers. Winner, Sigma-Labor 1.13.40⅖

Prix du Tir aux Pigeons for cruisers of 21 feet over all, with motor of 3½ ins. bore. Distance 8 rounds, 31 miles.

Gregoire VIII	1.05.56
Gregoire Peau Rouge	1.26.15
Labor Garonne	2.15.19
Miss Maud	2.47.52
Elizabeth	3.05.37

Average speed, 24.3 knots.
Last year, Gregoire IX..... 1.14.36⅖

Prix de la Mediterranee, for 26-foot cruisers having motor of 4.1 ins. bore; distance 8 rounds, 31 miles.

Gavroche	1.26.38
Minima	2.49.50
Tringle III	2.50.22

Average speed, 18.5 knots.
Last year, Labor IV..... 1.04.32⅘

Prix de la Cote d'Azur for cruisers, 40 feet over all, with motor of 5.1 ins. bore. Distance 8 rounds, 31 miles.

Saurer I	56.14
Saurer-Despujols	57.34
Mais-Je-Vais-Piquer	58.04⅕
Nautilus	58.34
Annette-Saurer	58.47
Saurer-Lurssen	Abandoned

Average speed, 28.7 knots.
Last year: Lurssen-Daimler..... 1.00.03⅖

Prix de la Riviera for cruisers 60 feet over all, with motor of 6.1 ins. bore. Distance 8 rounds, 31 miles.

Cocorico	1.09.53⅘
Gama	1.20.20⅗
Amaryllis	2.25.03

Average speed, 23 knots.
Last year: Chantecler II..... 1.06.39

Coup des Nations, open to 3 boats per nation. Distance 24 rounds, 93 miles.

Ursula (Great Britain)	2.40.27
Saurer I (Switzerland)	2.50.52
Cocorico II (France)	3.00.00
Annette-Saurer (Switzerland)	3.09.54
Sciata (Italy)	Abandoned
Tyreless III (Great Britain)	Towed

Average speed, 29.1 knots.
Last year: Lurssen-Daimler, 16 rounds in 2.01.20

Prince of Monaco's Cup (Nautical Mile and Flying Kilometre).

Racers and Hydroplanes.	Mile.	Kilometer.	Total.
Motocratie	1.51⅗	0.54⅗	2.46⅕
Sciata	1.53⅗	0.57	2.50⅗
Ursula	1.58⅗	0.59⅗	2.58⅕
Sigma III	2.59⅗	1.11⅗	3.11⅗
Cruisers.			
Nautilus X	2.00⅗	1.00⅗	3.01⅕
Mais-Je-Vais-Piquer	2.08	1.01	3.09

Navigability Prize, one round per day, whatever the weather.

1. Ursula
2. Saurer-Despujols
3. Cocorico
4. Fugi-Yama
5. Angela

Prix de Monte Carlo, open to all racers, distance 8 rounds, 31 miles.

Ursula	45.16
Saurer-Lurssen	52.10
Saurer I	53.54
Nautilus X	56.14
Tyreless III	56.23
Annette-Saurer	56.40
Saurer-Despujols	58.49
Cocorico II	59.54

Average speed, 35.6 knots.
Last year: Ursula 48.57⅗

Championship of the Sea, open to all cruisers having qualified; distance 32 rounds, 125 miles.

Mais-Je-Vais-Piquer	3.32.39⅖
Cocorico II	4.09.54⅗
Gavroche	4.50.45
Gregoire VIII	5.31.21

Average speed, 30.3 knots.
Last year: Ludssen-Daimler..... 4.45.17⅗

Crusader III, owned by F. W. Wort, of Atlantic City, and built by Adolph Apel, the builder of Sand Burr, photographed during her trial run. Although not officially timed, it is estimated by those who saw the performance that she attained a speed in the neighborhood of 50 miles an hour.

Among the Clubs

The Knickerbocker Yacht Club going into commission on Saturday, May 11th.

Cruise Through the Panama Canal Proposed.

The San Diego Exposition Cruise Committee, consisting of Henry E. Gielow, N. Y. Y. C.; Horace E. Boucher, Larchmont Y. C.; Morris M. Whitaker, Motor Boat Club of America, and Charles Mercer, corresponding secretary, has been working on the details of the 5,700-mile yacht cruise from New York to San Diego, Cal., by way of the Panama Canal, which is to take place in connection with the San Diego Exposition in 1914. It was decided to confine entries to the following classes: Yachts propelled by internal combustion motors, 79 to 90 feet, 90 to 100 feet and over 100 feet, overall measurement; steam yachts, 130 to 175 feet and over 175 feet, l.w.l. measurement; sail and auxiliary yachts (open to schooners and yawls, but not sloops), 50 to 75 feet, 75 to 100 feet and over 100 feet, l.w.l. The tentative course for the cruise is from New York to Beaufort, N. C., 500 miles; to Santiago, Cuba, 950 miles; through the windward passage to Colon, 800 miles, and from Colon through the Canal to Panama. From Panama the fleet will proceed to Managua, Nicaragua, 800 miles; to Tehuantepec, Mexico, 650 miles; to Manazanillo, 800 miles, and thence to San Diego, a distance of 1,200 miles, with probably a stop along the lower California peninsula for supplies and fuel. At an average speed of 240 miles a day the fleet will take 25 days to make the trip, exclusive of such time as may later be arranged for to give the participants an opportunity to inspect the Panama Canal. There will probably be four grand prizes: one for each of the divisions as regards power. In addition to these there will be two prizes for each class in each division, one for the best time, handicap considered, from New York to Colon, and the other for the best time from Panama to San Diego. The owner of every yacht that starts will receive a suitable trophy and every man on every yacht that completes the entire distance will be given an appropriate memento. As at present arranged, the competing yachts will leave New York, beginning some day early in September, 1914, and thereafter, according to the handicaps allowed to each, so that under normal conditions they will arrive at Colon within a few hours of each other.

The Albany Yacht Club, of Albany, N. Y., is planning a busy season. Regattas will be held every Saturday afternoon through July and August, the winner in each class to receive a pennant, which will be held for one week, and at the end of the season the boat holding the largest number of pennants will be awarded a cup. The racing divisions include two classes each of speed boats, cabin boats and open craft. A feature of this year's program will be a long distance race to Poughkeepsie, N. Y., and return, which will probably be held on July 4th. W. Martin has offered a cup for the winning boat. The Albany Yacht Club has withdrawn from the Hudson River Yacht Racing Association and plans to organize an upper Hudson club, which will probably include organizations at Newburgh, Poughkeepsie, Burlington, Rondout and on Lake Champlain. The question of breaking away from the American Power Boat Association has also been taken under consideration and if this is done, new racing rules will be drawn up by a committee appointed for the purpose which will be designed to eliminate the professional element entirely from all contests. The new home of the club is now ready for occupancy and will add much to the enjoyment of the members this summer.

Trophies for the Colonial Yacht Club cruiser race to Cornfield lightship starting July 6, donated by Senator C. C. Hunt.

The Knickerbocker Yacht Club, having stations at College Point and Port Washington, Long Island, formally went into commission for the season on Saturday, May 11th, the club signal being raised by Commodore W. E. Spencer. In the evening one hundred club members enjoyed a shell-fish dinner arranged by the chairman of the house committee, Harry Stevenson. This club is one of the oldest in the East, having been founded in 1874, and in former years handled the Marblehead Race when the latter was the only ocean race of note on the schedule.

The Bermuda Race.

The Yachtsmen's Club of Philadelphia, Pa., is to have the management of the annual motor boat race to Bermuda for the Bermuda challenge cup this year and the race will start from the Quaker City. Heretofore this important deep water contest has always started from New York City, but the success of the Philadelphia club with the Philadelphia-to-Havana race last year, inspired Commodore J. G. N. Whitaker to bid for the Bermuda race this season. The boats will start on July 27th from a point off Race street wharf and will finish off St. George's, Bermuda. Commodore Whitaker will be assisted in arranging the details by the regatta committee of the Philadelphia club, which is composed of the following men: M. E. Brigham, chairman; A. H. H. Edson, Chas. Lagen, R. M. Vanderherchen, F. G. Strassburger, Mr. Field, Mr. Cartledge and Dr. Eugene Swayne, secretary.

The La Crosse Motor Boat Club, of La Crosse, Wis., at its annual meeting elected the following officers for the year: Commodore, D. S. Fairbairn; vice-commodore, Lee Bell; rear commodore, W. F. Hurtgen; fleet captain, Theodore Thompson; secretary, H. J. Holley; treasurer, R. T. Ray; directors, Geo. B. Rose, Jr., F. H. Fowler, W. A. Wagner, R. C. Whelpley and W. Bell. It was announced at the meeting that the rule which has been in force heretofore barring from membership all those who are not motor boat owners, had been repealed and in the future all those who are interested in the sport will be eligible whether owners or not.

The Nassau County Yachting Association has been organized by the various yacht clubs on Hempstead Bay, L. I. The object of the association, as outlined, will be to promote motor boat racing and sailing on the Long Beach channel, to hold regattas during the season and to supervise the dredging and buoying of the channel between Rockaway Inlet and Point Lookout. The channel has been charted so as to give racing boats a 5-mile course with two turns and not less than 15 feet of water at low tide. The association plans to hold at least two big motor boat regattas in the course of the season. Officers have been elected as follows: Rowland H. Mayland, Hempstead Bay Y. C., president, and A. A. Dal Molin, Nassau Y. C., secretary and treasurer.

The Mahopac Boat Club, Lake Mahopac, N. Y., has issued a very attractive year book for 1912, illustrated with many scenes around the club quarters and on the lake. The club wound up the past year with 67 members, in-

cluding 13 women members and 12 juniors, and the report of the fleet captain places the number of craft in the squadron at 34, a very respectable fleet indeed. The club officers for 1912 are: Geo. C. Pennell, commodore; Clarence A. Pitman, fleet captain; James C. O'Connor, secretary; Peter A. Anderson, treasurer, and Wm. Chilvers, director. The club has decided on the following dates for the coming season: July 13, Secretary's cup; July 20, Ladies' race; July 26, Junior field sports; July 27 Club cup; August 3, Sealed Order race; August 10, Commodore's cup; August 16, Junior water sports; August 17, Carnival of water sports; August 30, Boat Club ball; September 2, Relay race, and September 7, Speed boat race.

The New York Motor Boat Club will hold its fourth annual motor boat race from New York to Albany and return on Saturday, June 29th, and Sunday, June 30th. The race will start at 10 a.m. from the club house at 147th street and Hudson River and the boats will run to the west pier of the railroad bridge off the club house of the Albany Yacht Club, where they will turn and start on the return leg. The distance is 235 nautical miles. There will be two classes, one for cruisers and one for open motor boats and all boats must be measured by the official measurer of the New York Motor Boat Club. A measurement fee of $5 will be charged. Cups will be presented to the winners on corrected time and a time prize will be awarded to the boat making the best actual time in each class. A shield will be presented to all other boats finishing. The owner must be aboard during the race and no professional pilot or navigator will be permitted. Each captain must keep a log giving the time of passing prominent points, which must be handed to the committee after the race. All boats must be equipped in accordance with government regulations. Entries must reach the committee before 6 p.m., June 26th, and a fee of $5 must accompany each entry. The club is planning a number of interesting events for the coming season. On June 16th the race to Tarrytown lighthouse and return will be held and on September 29th will be the annual race to Rockland light and return, 40 nautical miles.

The Hudson River Yacht Racing Association has published its racing schedule for the season of 1912. On May 30th the relay race from New York to Albany was held in which a message was carried from Mayor Gaynor, of New York City, to Governor Dix. The message was carried for one leg of about 15 miles by the fastest boat in each of the 12 clubs in the association. On July 4th, races will be held at the Tappan Zee Yacht Club, at Grand View-on-the-Hudson, and from July 20th to 22nd will be the dates for the association cruise from New York and Albany to the Poughkeepsie Yacht Club. On August 31 and September 2nd the annual regatta of the association will be held at the New York Motor Boat Club, New York City. President E. W. Marshall, of the association, has appointed the following committees: Prize committee, R. F. Swazy, N. Y. Motor Boat Club; E. L. Crocker, Tarrytown Boat Club, and H. M. Carpenter, Shattemuc Y. & C. Club. Classification committee, W. Scott, Tappan-Zee Y. C., and C. F. Chapman, N. Y. M. B. C. Law committee, C. G. Reel, Rondout Y. C., and Dr. T. V. Roe, Tarrytown Y. C. Publicity committee, W. B. Selden, N. Y. M. B. C., and S. A. Halsey, Columbia Y. C. Committee on formulating rules for power boat racing, C. F. Chapman, N. Y. M. B. C., and Prof. C. O. Gunther, Tappan Zee Y. C. Membership committee, M. W. Collyer, Newburgh Y. C.; T. A. Fearon, Yonkers Y. C., and F. A. Russell, Jr., Tarrytown B. C.

The Cleveland Powerboat Club, of Cleveland, Ohio, hope to have a fine anchorage off Gordon Park in the near future. Plans for a breakwater to extend for a considerable length in front of the park were submitted to a special committee appointed by the club and city officials for consideration and much progress has been made in the work of interesting the authorities in the project. If the plan goes through, it will mean the termination of a four-year campaign to secure better facilities for the enjoyment of the sport. The opening of the season finds the club fleet considerably enlarged, especially in the cruiser class.

The Colonial Yacht Club, of New York City, has decided to change the date of its cruiser race to Cornfield lightship, details of which were announced in March MoToR BoatinG, from June 22nd to July 6th.

Handicapping Suggestion.

The inadequacy of the racing rules of the American Power Boat Association which has been felt for some time has given rise to a number of suggestions for handicapping systems which would be fair to all. One of these set forth recently has a number of points, which make it worthy of more than passing consideration. The boats line up as usual and start off together. Naturally the swiftest boat will take the lead and reach the turning mark first. A timer will be posted at the turning mark and when the leader makes the turn, a signal will be given which can be seen or heard by all the contestants, and at this signal every boat will immediately turn and race back to the starting point and the first boat in will take the prize. It will be seen that by this system the contestants will automatically handicap themselves. The weak spot, of course, is that the dishonest owner can slow his boat down going out and then crack on all speed for the run in. To overcome this, a boat making the return leg at a speed faster by a certain percentage than the time going out, could be automatically disqualified or each entrant could be required to carry an official watcher whose duty it would be to see that the engine turned at approximately the same speed during the entire race. At all events, this plan would furnish some really exciting races for the spectator. It might be added that the scheme has been actually tried out with considerable success.

The Senator C. C. Hunt trophy, first prize in the Colonial Yacht Club cruiser race to Cornfield lightship, July 6.

The Oswegatchie Yacht Club was formed a short time ago by a number of citizens of Ogdensburg, N. Y. The nominating committee presented the following names for the club officers: Commodore, Chas. D. Hoard; vice-commodore, H. A. Lord; secretary, Chas. R. Flos; trustees, Capt. D. H. Lyon, J. C. Howard, Felix Hulser, E. L. Strong, Andrew Irving, I. P. Wiser, A. R. Porte and Charles Simmonds. It was moved that one ballot be cast for the commodore and another for the remainder of the officers as presented by the nominating committee. Both motions were unanimously carried. The names of J. N. Cunningham and Ralph Tallman were submitted for the treasurership and upon a vote being taken, Ralph Tallman was elected treasurer. A number of designs for a club pennant were submitted by the ensign committee. The one finally adopted was a light blue pennant with a red circle in the center, in which was set the monogram of the club. Commodore Hoard appointed a committee to look into the matter of securing a site for a clubhouse. It is confidently expected that the organization of the club will bring about a revival of regattas on the St. Lawrence and the character of the men included in the membership is sufficient warrant that the association will take a prominent place among the clubs scattered along the river.

The Bayside Yacht Club, Bayside, L. I., has announced the following racing schedule for the coming season: Opening day regatta, May 30th; Independence day regatta, July 4th; Larchmont race week, July 20th to 27th; annual cruise, starting August 7th, first day's run to Sea Cliff, second day's run to Oyster Bay or Northport, third day to Stamford, fourth day return to Bayside; Atlantic race week, August 19th to 24th; Labor day regatta, September 2nd; Fall regatta, September 7th; Manhasset Bay Yacht Club, September 14th. In addition there will be a series of from seven to ten races and two or three interclub events, the details of which will be announced later. The April issue of the Log Book winds up the fifth year of that clever little periodical. The fact that it is entering upon a sixth year of usefulness, speaks volumes for the character of the work. It deserves a prominent place among the really live and interesting yacht club publications.

The Great Lakes Power Boat League has announced the program for its third annual regatta, to be held under the auspices of the Royal Hamilton Yacht Club, at Hamilton, Ontario. On August 8th will be held the five-mile race for boats with two cylinders or less, the two-mile free-for-all race and the ten-mile handicap. In the late afternoon there will be aquaplane demonstrations. On August 9th will be held the twenty-mile events for the 20, 26 and 40 ft. classes and the 40 ft. displacement class. August 10th will witness the fourteen-mile cruiser race from Hamilton to Bronte and return and the twenty-mile race for the 32 ft. class. In the afternoon will come the annual International Motor Boat Handicap race over a course of twenty miles, open to any boat of 15 miles or over, and the Great Lakes Power Boat League Championship 25-mile event. The reliability cruise for the Commodore William E. Scripps' trophy, commonly known as the "Scripps' cruise," will start from Detroit July 30th, at 9 a.m., touching at Toledo, Rocky River, Erie, Buffalo, Dalhousie, Charlotte, Niagara and Toronto, and will wind up at Hamilton on the afternoon of August 7th.

The North Hudson Yacht Club gave its inaugural reception some time ago at Imperial Hall, West New York, at which a large number of motor boat men and their friends as well as a few canoeists and owners of sailing craft were present. The hall was attractively decorated with the club colors and everyone present wore a silk miniature of the club pennant. Although the club is a Hudson river organization, the Hackensack boat men were well represented. Officers of the club are as follows: Commodore, Charles Doell; vice-commodore, E. W. Keller; fleet captain, E. W. Clayton; recording secretary, S. Klassen; financial secretary, Floyd Clayton; treasurer, Fred Rademacher; trustees, August Nickel, E. W. Clayton, and R. Landeck. The club was organized August 31st, 1911, and the anchorage established at Woodcliffe on the Hudson river.

The Los Angeles Motor Boat Club, Los Angeles, Cal., started the season with a club cruise and fish dinner at Portuguese Bend on May 5th, to which all motor boat owners and their friends were invited, regardless of whether or not they belonged to any club. For this month a reception is planned on the evening of the 29th at the club anchorage, when an orchestra will render selections from the roof of the club's houseboat and members will entertain their guests on board their boats anchored close by. Other interesting events scheduled for the summer are: July 4th, races in the lee of Catalina Island; August 2nd, 3rd and 4th, races off Long Beach for hydroplanes, cruisers and fishing boats as well as displacement speed craft; August 24th and 25th, stag cruise to Portuguese Bend, the cruisers leaving on the evening of the 24th and the open boats arriving on the morning of the 25th to participate in the general good time; September 8th and 9th, a cruise to the Isthmus with reliability, endurance and economy tests, for which suitable prizes will be awarded.

The Savannah Motor Boat Club, Savannah, Ga., has announced, through the regatta committee, the schedule of contests for the summer. This includes a relay race to be held in June, starting at the clubhouse at Isle of Hope, to be followed by an endurance race on the 4th of July for which appropriate trophies will be provided. The season will be wound up with a big meet on Labor Day. Members of the club are showing much enthusiasm over the prospect for a very successful season and it is believed that more entries will be secured for the various events than in any previous year.

Big Plans for Chicago's Carnival.

Between August 10th and 17th, there will be held at Chicago, Ill., under the auspices of the Associated Yacht and Power Boat Clubs of America, a naval pageant and motor boat carnival that will be noteworthy even among the big racing meets scheduled for this season. The central location of the city and splendid course which the harbor affords, make Chicago the logical place for the staging of a series of motor boat contests and aquatic sports of a general nature, so when it was finally decided to hold the annual championship races of the Western Power Boat Association at the Windy City, a round-up of men prominent in yachting and motor boating circles was held and it was determined to make the power boat races and the international yacht races the nucleus of a naval pageant that would be long remembered. The moving spirits in the project were Commodore Wm. Hale Thompson, of the Chicago Yacht Club; Commodore Jas. A. Pugh, owner of the famous Disturbers; Commodore Thos. J. Quaile, of the Columbia Yacht Club, and Commodore Bayard Holmes, of the Jackson Park Yacht Club; and when the news of what they were trying to accomplish went forth, the business men of the city hastened to give their support. So those having the program in charge have been enabled to build up a magnificent structure. Naval sham battles and reviews will alternate with fireworks displays, swimming contests and exhibitions by sailors and marines of the United States Navy, men from the Revenue Cutter and Life Saving services and cadets from the naval training station at North Chicago. There will also be the Lipton Cup races of the Columbia Yacht Club and a Venetian night. These are only the events that have been decided upon at this early date and doubtless more will be added to swell the list. Of course, interest centers in the motor boat races and the string of trophies that have been provided should attract a fleet of speed craft such as is seldom seen at any one regatta. For the championship of America, William Wrigley, Jr., has offered a $5,000 perpetual trophy, which becomes for one year the property of the club whose representative carries off the honors in the free-for-all. That the winner may, however, have some lasting memento of his victory, a replica of the big cup, valued at $500, becomes the permanent property of the owner of the successful craft, and an endowment fund of $17,000 has been provided by the donor of the trophy to supply

Commodore James A. Pugh, a prime mover in the Chicago carnival.

the smaller cups year by year. For the winner in the forty-foot class, there is the Adam Weckler, Jr., trophy—a cup valued at $1,000—with the H. H. Porter, Jr., $250 trophy for the second boat. The William C. Thorne $500 trophy is the first prize for the thirty-two-foot class, while the Irwin Bros. $250 trophy goes to the holder of the next place. For twenty-six-footers there is a $500 trophy for the first prize and the Henry B. Clarke trophy for second place, and the winning boat among the twenty-footers will carry off the Hotel Sherman trophy, valued at $500. Besides the various trophies, there is a long string of cash prizes. In the free-for-all, a $1,500 purse goes to the winner. In the forty-foot and thirty-two-foot classes, there are cash prizes of $1,000 and $500 for first and second place respectively in each class. Purses of $500 and $250 are provided for the winner and "next best" respectively in the twenty-six and twenty-foot classes, and in addition there is a third prize of $150 for the twenty-six-footers and $100 for the twenty-footers. Then there is the William Hale Thompson trophy representing a value of $500, which goes to the first boat making fifty miles per hour or better in competition at these races, and those who have followed this year's output of speed boats are confident that the prize will not lack a claimant. In addition to the prizes for the motor boat races noted above special trophies, cups and purses have been put up for additional and match races, best illuminated and decorated boats in the Venetian night, etc. The motor boat races are open to members of any yacht club and besides the overall length classification and the prohibition of any ingredient used to increase the power of the gasoline, there are no restrictions. Boats of a lower class may enter a higher class. All races are to be heat races, the best three out of five. There will be no handicaps or time allowance. The officers of the Associated Yacht and Power Boat Clubs, the organization which has the carnival in charge, are as follows: Commodore, Wm. Hale Thompson; vice-commodore, Thos. Quaile; rear commodore, Dr. Bayard Holmes; treasurer, Nelson H. Lampert, and secretary, Edw. P. Farley. For manager, John R. Young has been chosen, who handled the military tournament at Chicago last summer. The address of the association is 952 First National Bank Building, Chicago, where all information can be obtained. Entries close August 5th.

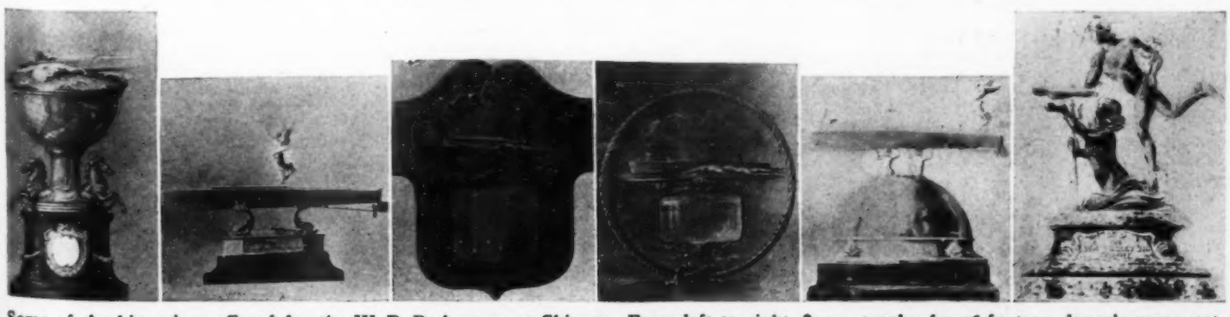
Tide Table for June.

NOTE: This table was compiled for the Port of New-York. To find the time of high or low water at other points, add or subtract the increment in the table:

DAY OF MO.	WEEK.	HIGH WATER. A.M.	HIGH WATER. P.M.	LOW WATER. A.M.	LOW WATER. P.M.
1	Sat.	9:10	9:08	3:17	3:08
2	Sun.	9:46	9:45	3:57	3:46
3	Mon.	10:17	10:20	4:37	4:20
4	Tues.	10:51	10:53	5:15	4:56
5	Wed.	11:28	11:31	5:55	5:37
6	Thur.	.....	12:10	6:36	6:25
7	Fri.	12:13	1:00	7:12	7:23
8	Sat.	1:02	1:54	7:57	8:27
9	Sun.	1:54	2:50	8:43	9:30
10	Mon.	2:50	3:46	9:35	10:30
11	Tues.	3:48	4:40	10:27	11:27
12	Wed.	4:50	5:33	11:20	.....
13	Thur.	5:48	6:25	12:20	12:12
14	Fri.	6:45	7:16	1:12	1:03
15	Sat.	7:42	8:07	2:03	1:56
16	Sun.	8:37	8:58	2:53	2:48
17	Mon.	9:33	9:50	3:44	3:43
18	Tues.	10:30	10:43	4:36	4:42
19	Wed.	11:28	11:39	5:30	5:43
20	Thur.	.....	12:30	6:24	6:48
21	Fri.	12:37	1:31	7:20	7:54
22	Sat.	1:42	2:32	8:17	9:02
23	Sun.	2:49	3:30	9:15	10:07
24	Mon.	3:57	4:35	10:12	11:07
25	Tues.	5:01	5:17	11:06	.....
26	Wed.	6:00	6:05	12:01	12:05
27	Thur.	6:52	6:50	12:50	12:43
28	Fri.	7:37	7:30	1:35	1:29
29	Sat.	8:18	8:10	2:18	2:10
30	Sun.	8:53	8:45	2:56	2:48

To find the approximate time of high and low water at any of the following points add (+) or subtract (—) the following times from the time of high or low water at New York:

Halifax	—0:06	Yonkers	+0:56
Portland	+2:35	West Point	+3:02
Boston	+3:02	Albany	+9:54
Portsmouth	+2:56	Sandy Hook	—0:40
Gloucester	+2:57	Philadelphia	—0:36
Newport	—1:07	Cape May	—0:11
Block Island	—1:17	Baltimore	—1:28
New London	+1:05	Washington	+0:05
Hartford	+8:43	Old Pt. Comfort	+0:28
New Haven	+2:58	Savannah	—1:28
Bridgeport	+2:52	Key West	+0:11
Willet's Pt.	+3:02	Galveston	+2:44



Some of the big prizes offered for the W. P. B. A. races at Chicago. From left to right, $1,000 trophy for 26-footers, donor's name not yet disclosed; the Thorne trophy for the 32-foot class; trophy offered by Commodore Thompson for the first boat to make 50 miles per hour; H. H. Porter trophy for the second boat in the 40-foot class; the Weckler trophy for 40-footers; the $5,000 Wrigley trophy for the free-for-all.

New Things for Motor Boatmen

The Octa Log, a New Speed Indicator.

This log has been devised by an expert mechanician particularly for use upon pleasure craft and is being made by John E. Hand & Sons Company, 222 Walnut Street, Philadelphia, Pa. This log is very moderate in cost and can be used on pleasure craft having a speed of from 5 to 15 knots. A special feature is the angle at which the dial in use presents to the observer. With many types of logs, the dial cannot be read easily, but with the Octa log the dial is always in a position at right angles to the line of vision for a person of average height standing at a considerable distance from the dial. The register may be removed from the socket very easily by giving it a half turn in a horizontal plane and raising it from the bayonet catch, the socket being screwed to the taffrail. This log will record 100 nautical miles by tenths of a mile divisions and can be easily read, the dial having a diameter of 3 inches. Ball bearings are used throughout and the glass cover is arranged to open so that the hands can be set. The price is $10.

* * *

The Ellis Gasoline Filter and Purifier.

This instrument is made of an aluminum composition and weighs about 6 ounces, including the brass unions necessary, and it is designed to be inserted in a convenient place between the gasoline tank and the carbureter and will eliminate from the gasoline supply any water or impurities that may be contained in it. The gasoline first enters the precipitation chamber or pocket, as shown in the accompanying illustration, and it is then filtered through two fine screens, two felts and quartz. Any water will find lodgment in the precipitation chamber and will be held there because of the greater specific gravity, while the gasoline raises and passes through the filter to the carbureter. By a slight turn of the thumb screw, the water or sediment may be drawn from the precipitation chamber. To disconnect the device is but a moment's work and it can be just as easily attached. It is made by the National Sales Company, 45 Milk Street, Boston, and sells for $3.50. A small size for very small motors sells for $2.50.

* * *

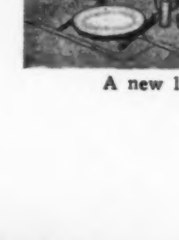
A New Type of Elgin Spark Plug.

This new plug is designed to be oilproof and its construction is such that there is no great pressure upon the insulator, eliminating one of the chief causes for breakage. The plug is assembled by inserting the insulator through the metal body with a gasket between the metal body and the shoulder of the insulator. This insulator is provided with a groove in which a split bushing is placed, which is screwed down by a lock nut to draw the insulator up tight to provide against leakage. The electrodes are made of heavy material, with the firing points spun in. The expansion is cared for by a spring washer located at the top of the insulator. The body of the plug is used for one side of the circuit and the other side is made by bending over the terminal so that there is but a small space between the side walls and the electrodes. The two shields at the end of the insulators ward off the oil toward the side of the plug so that the plug cannot become short-circuited or fouled through this means. The price of this plug is $2.00 and it is made in all of the standard sizes. It is made by the Elgin Spark Plug and Ignition Company, Elgin, Ill.

The Octa log.

A Shipmate range.

The Ellis gasoline purifier.



Sectional view of the Elgin plug.

The Fairhaven mooring anchor.

A new luncheon kit.

A New Luncheon Outfit.

C. F. Rumpp & Sons, 683 Broadway, New York City, have recently devised an inexpensive but complete luncheon outfit, which is unusually compact and which can be stowed away in any available place upon the boat. This outfit provides for six persons, all the utensils being placed in a russet cowhide case measuring 17½x15x6 inches, as shown in the accompanying illustration. The case contains two nickelplated luncheon boxes, six enamel plates, four enamel cups, six Rogers silver plated knives, forks and spoons, six napkins, salt and pepper shakers and space for two quart-size Thermos bottles. The same outfit is also made for four persons and contains space for two pint-size Thermos bottles. The plates and cups are non-breakable and the luncheon boxes being nickelplated will not easily rust if properly cared for. The price of the pint size is $13.00 and of the quart size $15.50.

* * *

The Shipmate Range.

The single four-hole type of galley range shown in the accompanying illustration is made by the Stamford Foundry Company, Stamford, Conn., and is one of the most popular of the more recent types. This is made in two sizes and is designed to burn either coal or wood and the feet can be furnished in a number of different heights so that the stove can be placed in any convenient position. The price of the range with standards and rails in the type shown, is $24.50 and a water front will be furnished for $6.00 extra if so desired. The ordinary height of the range is 20½ inches and the size of the top measures approximately 24 x 25 inches. The parts exposed to the fire are made especially heavy so that repairs are seldom needed and as the flues are large and deep, perfect operation is provided.

* * *

Fairhaven Mooring Anchor.

This anchor is a new product of the Fairhaven Iron Foundry Company, Fairhaven, Mass., and is of the bulb shank mushroom type and particularly adapted for mooring over sand or mud bottoms. It is useful also in a fairly unprotected bay, as the safety of the vessel does not depend upon a single chain to support the whole weight of the vessel. The reason for this is the fact that the bulb shank weighs 25% as much as the mushroom end, so that it practically forms a buffer between the mooring part and the vessel. When the sea lifts or throws the boat the slack cable is taken up and the bulb is then lifted before any strain falls upon the mushroom. This prevents a sudden strain upon the cable, and as soon as the boat drops from the crest of a sea the bulb again sinks to the bottom.

* * *

Thurber Rotary Starter.

This instrument, known as the Thurber turbine or rotary starter, is the invention of Edward J. Thurber, of the Chalmers Motor Company of Louisiana, Ltd., New Orleans, La., and is one of the latest types placed upon the market. A compound air pump is located upon the top of the first cylinder, which compresses air upon the firing stroke of the motor, which air is compounded before being delivered to a pressure tank used in connection with it. This eliminates the necessity for a mechanically operated pump. The pressure is delivered to the rotor which is used to start the motor by means of a push-valve in the line connecting the air supply tank and this valve can be operated to lock the air in the tank at night, thus eliminating extra valves.

A. B. C. Life-Saving Appliances.

The Welin Davit and Lane & DeGroot Company, Consolidated, Long Island City, N. Y., have recently brought out two life-saving appliances in the form of a life raft and a ring-buoy, both of which are especially suited to the cruiser of moderate size. The raft is made of solid tropical wood weighing about two-thirds as much as a cork body of the same size and is subjected to a waterproofing process and covered with canvas. The finished article makes a life raft small in size which is convenient to stow on the trunk cabin. It is made in three sizes varying from 4 to 7 feet in length, the medium size weighing 45 pounds and being capable of sustaining eight persons in the water. In addition to this raft, the life-saving equipment may be made complete by the use of the life rings and life preservers shown in the accompanying illustration. This ring-buoy is about the same size as the cork life ring ordinarily used in the navy, but is 50% lighter, therefore possessing 50% more buoyancy. It is impervious to water or dampness and will easily support two persons in the water, although the ring is also made in a small size to accommodate one person safely. These ring-buoys are made of the same material and in the same manner as the life-rafts and have proved very efficient in service.

* * *

The D. K. W. Carbureter.

This carbureter is made by the Duquesne Auto Accessories Company, Ltd., of Pittsburgh, and possesses an unusual feature in the triple auxiliary air valves, which are opened by the suction of the motor in succession and supply the auxiliary air as needed. The general construction provides for a mixture supply in which the gasoline is at a fixed ratio to the air, the auxiliary air being supplied through three spring-controlled air valves. The carbureter is provided with a water jacket and a special cup, which for starting is partially filled with gasoline by operating a priming lever. The fuel is delivered to the carbureter at the connection "A," passes outward through a screen and a needle valve to a float chamber and from this it reaches the nozzle "C" through the passage "D." The tip of this nozzle is slightly above the gasoline level in the float chamber. "G" is a throttle which controls the speed of the motor. The amount of air drawn in through the passage surrounding the nozzle "C" is regulated by the air cup "H," and auxiliary air is drawn in through "J," "K" and "L." The price of this carbureter is $25.00, $30.00 and $35.00 for the 1¼, 1½ and 1¾-inch sizes.

* * *

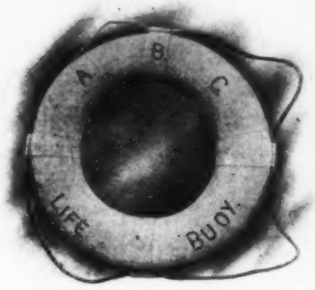
Roper Gasoline Gauge.

A gauge for measuring the amount of gasoline in the tank and indicating clearly at all times the exact amount available, has just been brought out by C. F. Roper & Company of Hopedale, Mass. The important features of this gauge are its rapid action and the fact that it is not affected by the position of the tank, recording the amount accurately whether this is level or not. The gauge is very accurate and can be placed in any position as long as it is below the level of the tank. Its operation involves no intricate mechanism, as the indicating hand merely has a simple crank attached to it which is moved by a rod having an up and down motion. There are no hollow floats and the indicator requires no time to raise, as it is always stationary at the level of the gasoline in the tank. The dial is heavily enameled and the face is covered by a plate glass, the whole outfit being enclosed in a polished brass case. A ¼-inch pipe connects the gauge to the regular tank outfit and the price with a suitable length of tubing is $10.00.

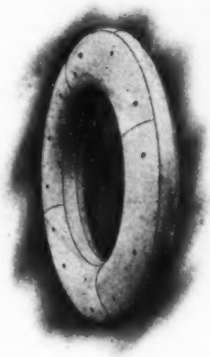
* * *

Tarnish-Off.

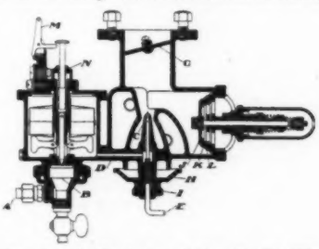
This cloth is a new product of the Chemical Products Company, 320 North Main Street, St. Louis, Mo., and is, as its name implies, for the purpose of cleaning and polishing all kinds of metal work. A small piece of this cloth will polish all the brass parts about a boat and the larger size, which sells for 25¢, it is said will outlast a gallon of liquid metal polish. The cloth can be used over and over again and does not leave any spots or streaks upon the parts polished or upon woodwork.



The A. B. C. life buoy.

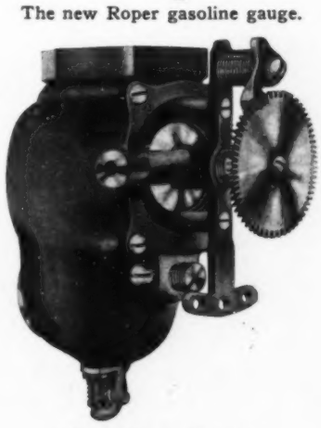


A. B. C. buoy without canvas covering.



Sectional diagram of the D. K. W. carbureter.

The new Roper gasoline gauge.



The Atkins carbureter.

Simplex Motor Starter.

This is a mechanical device made by the Simplex Manufacturing Company, Anderson, Ind., which is designed to rotate the motor a sufficient number of times so that the carbureter may take up its work without difficulty. This device has in connection with it a priming pump for forcing gasoline into the cylinders and, after the motor is started, it can be operated by feeding gas from the priming pump in case for any reason the carbureter refuses to operate. The mechanism consists of seven pieces assembled on a bushing, which is mounted on the main shaft either in front of or behind the motor. It is operated by means of a pedal placed in any convenient location. This pedal is connected by suitable cranks so that it operates as a safety starter and in conjunction with this is the small priming pump mentioned, which draws gasoline from the main supply into four cylindrical chambers ready to be forced into the cylinders of the motor. With the downward stroke of this pump four pistons working in the cylindrical chambers spray the gasoline in equal proportions into each cylinder, after which the motor is rotated by the pedal. The weight is but 10 pounds and with its use the motor can, of course, be started whether it stops upon the dead center or not.

* * *

Renew Gloss.

The Superior Specialty Company, 418 South Third Street, Louisville, Ky., has brought out a polishing liquid for use upon the bright parts of motor boats or any highly polished furniture. This liquid is carefully and scientifically prepared and acts as a renewer for the varnish or any other surface to which it is applied, cleaning and polishing it and bringing out its original elasticity. The liquid is alike useful for application to metals or hard wood and creates a brilliant finish for any varnished metal or japanned surface. It is not gummy or sticky but dries quickly and leaves a finish to which dust will not easily adhere. Renew Gloss is applied with a piece of cheesecloth and if rubbed in will remove any stains. The cost is $1.50 a quart.

* * *

American Life-Saving Garment.

The American Life-Saving Garment Company, 53 State Street, Boston, have devised a garment in different styles and shapes which can be worn at any time and which is a protection aginst cold as well as an efficient life preserver in the water. It is made as a Norfolk jacket in various sizes and as a waistcoat, or as a garment specially suited for women and children. It is said that one of these jackets will float a full-dressed man for days in either salt or fresh water, and as it is actually fitted to the figure it is a very comfortable garment. The Norfolk jacket sells for $5.00, or in a more elaborate style for $20.00, and the other garments are made at various prices according to the size and style. The waistcoat when fitted with a white canvas covering makes a very efficient life-preserving cushion which may be thrown out with life lines attached.

* * *

The Atkins Carbureter.

This carbureter is a new type which is being placed upon the market by the Atkins Manufacturing Company, Coldwater, Mich., and is essentially different from the ordinary carbureter, since it is not of the float feed type. In other words, the float does not stop the flow of gasoline through the nozzle when the motor is stopped, but merely regulates the hydrostatic pressure on the nozzle. The automatic shut-off closes whenever the motor is at rest, but is wide open during all speeds of the piston travel. It is very simple and compact, the greatest size over all of the 1-inch type being 3¾ inches and of the 1¼-inch type 4 inches. The carbureter may be attached to the motor in any position in which it can be held and it is not necessary to have any particular side at the top, nor is it essential that the instrument should be held level. The pressure regulator may be placed anywhere in the feed pipe most convenient provided it is at a sufficient height to insure gravity feed at all times. It is said that this carbureter combines the power of a mixing valve with the range of speed of the float-feed carbureter. The list price of the 1-inch size is $10.50.

Yard and Shop

Metal life boats and life rafts in course of construction at the works of the Welin Marine Equipment Co., Long Island City, N. Y.

Well-Known Engine Manufacturer Passes Away.

We have been advised of the death of Ernest S. Bowen on Saturday, April 27th, following a severe attack of typhoid fever. Mr. Bowen was vice-president and general superintendent of the Fay & Bowen Engine Company of Geneva, N. Y. He was well known in marine gas engine circles and his untimely death will be much regretted by the entire industry.

Welin Davit Company Takes More Convenient Title.

After June 1st, the Welin Davit & Lane & DeGroot Company of Long Island City, N. Y., will be known as the Welin Marine Equipment Company. The company is well known as a manufacturer of metal life boats and life-saving equipment for vessels of the larger type.

Seattle Wants Gas Engine Plants.

The Publicity Bureau of the New Chamber of Commerce of Seattle, Wash., is calling attention to the advantages of that city as a location for manufacturers supplying the motor boat trade and especially makers of gasoline engines. The thousands of motor boats operating on Puget Sound and Alaskan waters as well as the many lakes of the Northwest, are equipped and kept supplied from Seattle, and at present practically all the engines and supplies come from Eastern points. The Bureau has secured a large tract of valuable land with rail and water facilities and terminal accommodations, at a low figure and is prepared to lease it at $150 per acre per year to manufacturers. Seattle is preparing to spend large sums for harbor improvements and the exceptional manufacturing conditions as well as the opportunities offered by the growth of motor boating on the North Pacific Coast should appeal to manufacturers who are thinking of seeking a new location.

V-bottom runabout for crew coaching, built by the Bath Marine Construction Co. for the Harvard Rowing Association.

The East Asiatic Co. and the Diesel Engine.

The East Asiatic Company, owning and operating the Diesel-driven ships Selandia, Jutlandia and Fiania, in their fifteenth annual report, gave the following reasons for the use of oil-engined vessels instead of steamers: (1) The savings effected by using oil instead of coal may, under the oil contract made by the company covering a series of years, be estimated at more than 50 per cent. (2) The increased loading capacity obtained through less weight of machinery, as well as larger cargo space obtained by the elimination of coal bunkers and greater carrying capacity, owing to the difference in the respective weight of quantities of oil and coal. (3) The loss of time required for calling at ports to fill coal bunkers is avoided. A steamship in the far eastern trade will require to coal at eight or ten different ports, whereas a motor vessel need only take in oil at one or two ports. Furthermore, the drawbacks attendant on coaling and stoking are gotten rid of; savings are in this way effected and expenses for maintenance reduced. Moreover, there is no heating of the vessel from the boilers which, particularly in the tropics, is of great importance to the cargo, and also the danger of spontaneous combustion is diminished. (4) The cost price of a motor ship like the Selandia is about 10 per cent. higher than that of a corresponding steamship; but, on the other hand, the loading capacity is larger by about 10 per cent., so that the gain per ton carrying capacity will amount to about the same.

A Motor Boat for Crew Coaching.

The Harvard Rowing Association recently procured from the Bath Marine Construction Company, Bath, Me., a 30 ft. V-bottom motor boat for a coaching launch. The lines of the boat are of a general V section below the waterline, those forward being concave thus giving the water a rotary motion, reducing the resistance and minimizing the weight. Above the water, instead of the flat sections usually adopted, she shows a flare forward which keeps her dry and the tumble home aft with its curving lines gives a pleasing appearance to the stern. The boat was built with a view to obtaining great strength as she will have to be lifted in davits and transported from place to place. To fulfill the conditions of a coaching launch properly, about 16½ miles per hour should be maintained. This boat showed a speed of 20.6 miles over a measured course on her trial trip and the wake was as flat as if no boat had passed. Another feature is the extreme ease with which she can be manœuvered. The power plant selected was an 18-25 H. P. Sterling motor.

Boat Makers Consolidate.

An event of great interest to the motor boat world is the recent purchase and consolidation of three important boat and marine engine plants by a new corporation organized for that purpose. The companies included in the deal were the Racine Boat Mfg. Company, Muskegon, Mich., the Truscott Boat Mfg. Company of St. Joseph, Mich., and the Shell Lake Boat Company, located at Shell Lake, Wis. The Racine-Truscott-Shell Lake Boat Company, as the new corporation is styled, has been organized under the laws of Wisconsin with a capital stock of $1,000,000. The president is J. M. Smith of Shell Lake, Wis., a well-known banker and the former head of the Shell Lake Boat Company. The other officers are: J. M Truscott, secretary; Paul Findlay of New York, vice-president; Geo. H. Lill of Chicago, and Geo. S. Lovelace of Muskegon, Mich., directors. W. J. Reynolds, formerly head of the Racine Company, has been given complete charge of the selling end of the business. The product of the constituent companies of the big corporation is too well known to need further comment and the concentration of the selling and manufacturing departments of the three concerns cannot fail to result in decided advantages both in economical production and effective service to customers.

Luders Moves Further Up the Sound.

About the first of this month, the Luders Marine Construction Company of Port Chester, N. Y., will move their quarters to a new plant at Stamford, Conn. The change has become imperative through the rapid increase in the company's business and the impossibility of securing adequate facilities near their present location. Heretofore the concern has confined itself almost entirely to yacht designing and building, but with the new facilities opportunity will be given for storage and repair work in addition. The new shops are remote from any other establishment and, although land-locked, are practically on the open sound. The plant is ten minutes from the Stamford station, which in turn is 50 minutes from Grand Central, thus bringing the headquarters of the company within an easy hour's journey of New York.

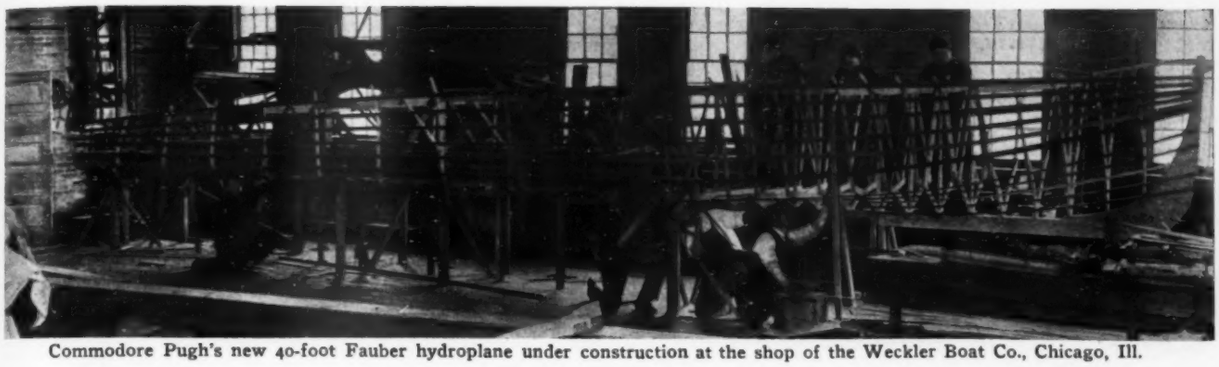
Hill Leaves Brown and Sharpe.

John W. Hill, a mechanical engineer of wide experience, has severed his connection with the Brown & Sharpe Mfg. Company, to accept the position of sales engineer with the Bantam Anti-Friction Company, makers of roller and ball bearings at Bantam, Conn. He has at various times been associated with the General Electric Company, Westinghouse Electric & Mfg. Company and the American Locomotive Company's works at Providence.

Erd Will Change New York Agency.

The Erd Motor Company of Saginaw, Mich., has announced that the Gasoline Engine Equipment Company, the Erd Motor Company's New York City representative, will not have the handling of Erd motors this season. The Erd people are making other agency arrangements which will be announced later.

Lady Meredith, a well-known 24-foot Pacific Coast speed boat. She has a 25-h.p. Buffalo. L. E. Carter, San Diego, owner.



Commodore Pugh's new 40-foot Fauber hydroplane under construction at the shop of the Weckler Boat Co., Chicago, Ill.

Doehler Opens Office at Detroit.

The Doehler Die-Casting Company of Brooklyn, N. Y., has established a Detroit office in Room 1313, Ford Building. The office will be under the direction of H. B. Griffin, vice-president of the company.

Atlantic Company Opens Sales Rooms in Connecticut.

The Atlantic Company of Amesbury, Mass., has announced the opening of salesrooms and a supply station at Westport, Conn., in charge of Thornton Smith, who will devote his time and attention to the interest of the company's customers on Long Island Sound, in this vicinity. Standard boats will be carried in stock for quick deliveries and gasoline, oil and accessories will be obtainable.

Lackawanna Gets Pacific Coast Agency.

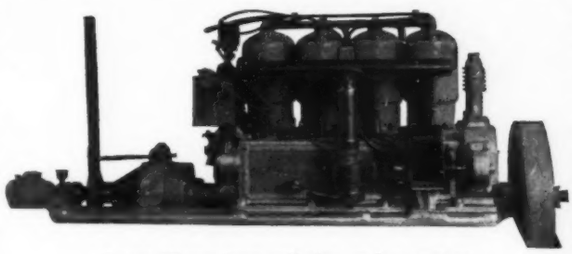
The Lackawanna Mfg. Company, makers of Lackawanna valveless marine motors, have opened new headquarters in Seattle, Wash., in charge of O. E. Nilsen, who is also agent for the Atlas engine and is well-known in the marine gas engine trade. The new showrooms are located at 5 Colman Dock.

A New Sleeve Engine.

Now that the era of the sleeve valve motor seems to have really arrived, the number of these types of engines is already beginning to multiply. A recent arrival in this field is the Howard single-sleeve machine, made by the New York Motor Works, of Avondale, N. J. The crank shaft, base, connecting rods and pistons are of the usual type. The piston is surrounded by a single sleeve, the upper portion of which is split so that by expanding and contracting with change of temperature it can act as a packing ring. The sleeve is provided with ports extending the length of the piston stroke and is rotated continuously in one direction at half speed by a suitable mechanism. Inlet and exhaust ports are provided in the cylinder, corresponding to the ones in the sleeve, so located in the circumference of the cylinder as to make proper timing in conjunction with the motion of the piston. Thus the ports in the sleeve are alternately presented to the exhaust and inlet ports in the cylinder, the cool inlet charge counteracting the heating caused by the exhaust. This combination of the sleeve and piston movement results in a very free valve opening at the end of the inlet stroke and the beginning of the exhaust stroke. These engines are made in two sizes, a four and a six cylinder with a bore and stroke of 4 x 6 inches.

Reynolds Brings Out a "Six."

The success achieved by the four cylinder four cycle 15-20 h.p. rotary valve engine which the Reynolds Motor Company of Detroit have been building, has led them to produce this year a 4½ in. x 6 in. six cylinder model which is illustrated on this page. Although possessing high power, this engine is wonderfully clean and simple in appearance, and as in the four cylinder, with the exception of the flywheel, there are no moving parts exposed. As will be seen by the illustrations, the motor has apparently seven cylinders, but the central one is merely a dummy in which is carried the vertical drive shaft connecting with the gears. On the upper end of this shaft is a flat spiral gear from which three gears, one keyed to the stem of each valve, are driven each way. The valves are flat half-inch discs, in each of which is cut a single triangular port which in its rotation alternately uncovers the intake and exhaust passages in perfect time with the strokes of the piston. The valves are made of a special bronze composition, annealed before the final finishing, and the fact that they are held up to within one or two thousandths of an inch of their seats gives no opportunity for carbon to lodge and does away with the necessity of valve grinding. The valves are supplied with oil from a force feed lubricator, the crank case and cylinders being lubricated by the splash system. Other features of the motor are its silent operation; the small amount of wear, due to the absence of small and delicate parts; its great accessibility, and its compactness. The engine is equipped with a Paragon reverse gear, the case of which is cast integral with the lower half of the crank case, and a Briggs and Stratton waterproof distributor for ignition.



Loew Victor four-cylinder, 50-h.p. motor.

Detroit Company Offers Prize for Cadillaqua.

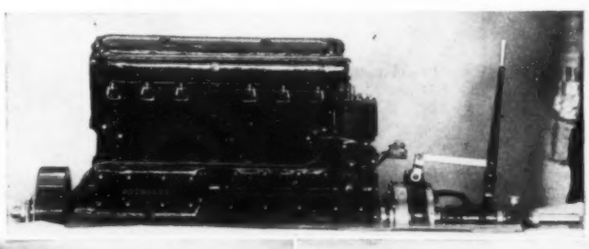
The interest shown in the Cadillaqua week to be held at Detroit, Mich., in July, a note of which appeared in MAY MoToR BoatinG, is rapidly growing with the approach of the carnival and the leading manufacturers of Detroit are doing their part in offering valuable prizes for the different events. As an example of the encouragement the project is receiving in this respect, the Detroit Boat Company has offered as first prize in one of the canoe features a new model of a 1913 motor boat named the Cadillaqua, in honor of the festival, which is now under construction. She is designed along the most advanced lines and will embody the most up-to-date features in motor boat construction and equipment.

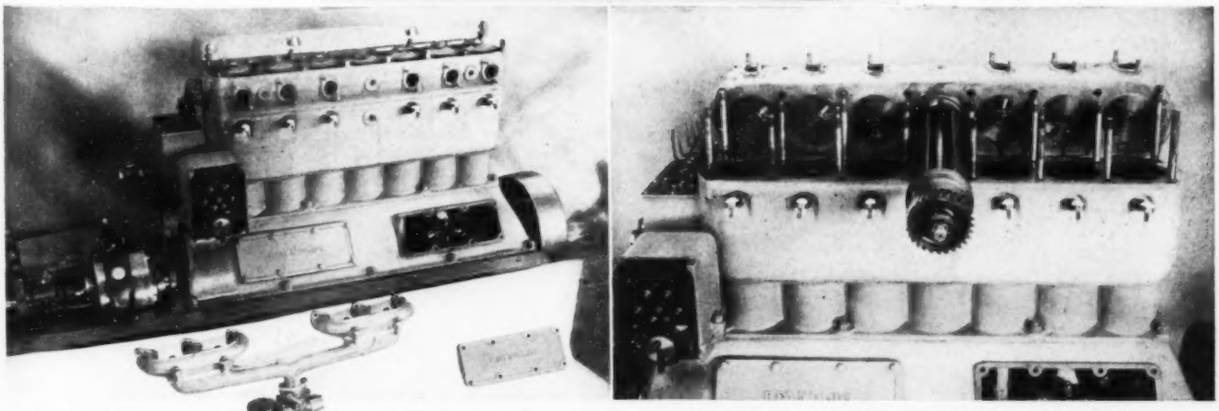
The Loew Victor Line.

The Loew Mfg. Company, of Cleveland, Ohio, are presenting a very comprehensive line of four cycle marine motors this season, ranging from 6 to 60 h.p., and built with from 1 to 6 cylinders. The greatest care is taken in the manufacture of Loew Victor engines. All parts are machined with special tools and jigs, making each an exact duplicate of every other of its kind and each part down to the smallest is made according to its own individual blue print with its own limiting sizes in thousandths of an inch. The ignition system employed on the four and six cylinder motors is the Bosch high tension magneto with Connecticut igniters and Bosch coils and spark plugs, giving two separate and distinct systems of ignition. On the one, two and three cylinder machines a complete ignition system is furnished, with coil, timer, etc. Lubrication is obtained by a mechanical oiler combined with automatic splash and base circulation. Every Loew Victor motor is equipped with a practical air compressor which is part of the crank case. The equipment furnished with these engines is very complete, including besides the ignition system and air compressor referred to, water pump and reverse gear, propeller and boat equipment. The Loew Company are also building a kerosene engine in 6, 12, 18, 25 and 36 h.p. sizes, designed to convert kerosene into gas by the retort process. This method eliminates all the smoke and odor which attends the usual process of simply heating the kerosene to make the gas. The engine is simple in design and can be operated by an unskilled operator with even less trouble than the ordinary gasoline motor. All Loew engines are fully guaranteed, and the standing of the company makes it certain that the guarantee will be backed up.

The All-in-One Perfex.

To meet the demand for an inexpensive jump-spark ignition system for one-cylinder engines, which is absolutely waterproof and of high efficiency, the Electric Goods Manufacturing Company has brought out this season an ignition system, known as the All-In-One Perfex. A heat and waterproof case contains an induction coil and condenser. The vibrator is carried at the top and is adjusted by turning a cap in either direction which, besides this function, serves as a cover. The spark plug is detachable for renewal of the porcelain and the wiring is extremely simple, no high-tension wires whatever being used. The induction coil is wound by the Snell "helical process," owned by the manufacturers. This device will operate successfully on dry cells, storage battery or the Perfex alternating current magneto. While designed especially for one-cylinder engines, it will give satisfactory service on larger sizes.





Construction features of the new Reynolds rotary valve six-cylinder. The right-hand photograph shows clearly the interesting valve mechanism.

Wanderlust, the Regal-powered motor boat that made the trip from St. Paul to New Orleans.

Cruising the Length of the U. S.

The Wanderlust, illustrated on this page, recently earned the distinction of traveling practically the entire length of the United States. The cruise was made by Amos Burhans, a prominent newspaper man of St. Paul, Minn., accompanied by his wife and two children, and extended from St. Paul down the Mississippi to New Orleans, a distance of 2,500 miles, including side trips. The Wanderlust is 35 ft. long with a beam of 8 ft. 8 in. and stern 6 ft. wide to get the 2 ft. 2 in. draft necessitated by shallow river cruising. The cabin is 25 ft. long, divided into three sections of about equal length. The forward section contains a locker over which is a berth and also a steering wheel, making it a very acceptable pilot house in bad weather. The second section also contains a large berth besides a wardrobe, dressing table, cupboard for dishes, folding table and several large wicker chairs. The after cabin contains a built-in galley, sink, toilet, berth with locker under it and the single cylinder heavy duty 7 h.p. Regal engine which furnishes the power.

Storm Oil.

"Pouring oil on troubled waters" is excellent advice, but it is also necessary to know the right kind of oil to pour, or the results may be disappointing. Lard oil, while perfectly satisfactory for use in the tropics where cold weather is not encountered, because of its high cold test would not be satisfactory in North Atlantic waters and would be found to congeal and not spread rapidly over the surface of the sea. About the best oils for the purpose are extremely low cold test fish oils, but their high cost prohibits their general use. A good brand of storm oil is made by the New York Lubricating Oil Co. of 116 Broad street, New York City, known as "Wave Quelling Oil," which has been used by a number of the large steamship companies. It is heavy in body and black in color and has a congealing point of about 10 degrees Fahr.

Preventing the Exhaust Noise Nuisance.

The Thermex Silencer, made by the Thermex Silencer Works, East Boston, Mass., is a handy appliance for the motor boatman to remember, in view of the increasing agitation against the noise nuisance caused by unmuffled exhausts on the inland waterways. The manufacturers make a number of strong claims for this device, among the principal ones being that when using the circulating water from the cylinder at a temperature of 70 degrees, the silencer will reduce the temperature of the exhaust gases to 90 degrees; that it will remove all odor unless an excess of lubricating oil or gasoline is used; that it will reduce the noise of the exhaust so that it can hardly be heard 300 feet away; that it will not cause back pressure, and that it will not clog. The Thermex is made in a number of different sizes for exhaust pipes from 1¼ up to 3 inches. The company also makes a well-designed under water exhaust which forces out the exhaust gases by means of a water jet.

An Advertisement Error.

A. B. Sands & Son Company, 22 Vesey street, New York City, have called our attention to two errors in their advertisements in May MoToR BoatinG. In the half page advertisement on page 130, the line just above the company's name should read "*Catalogue* R, illustrating complete line free upon request," the word "catalogue" having been omitted in the advertisement. In the full page advertisement on page 134, the word "fixtures" in the top line of page was wrongly spelled.

A Well-Designed Bilge Pump.

The Aaron Automatic Bilge Pump, built by the Aaron Automatic Bilge Pump Company, 171 Westminster street, Providence, R. I., has as one of its attractive features the fact that it takes no power from the engine and requires no split pulleys, lever throws or other bringing-into-action attachments which depend upon the watchfulness of some one who may be too busy or too forgetful to throw the pump into or out of connection. With the Aaron, on the other hand, the work is done by the circulating water of the engine, after it has completed its work of cooling the cylinder. As long as the engine runs the Aaron is in operation, first pumping out the bilge water and then air, and with the latter any free gasoline vapor that may have gathered in the bottom of the bilge. While this device is admirably adapted to any type of gasoline driven craft, it has been found especially useful for pumping out the holds of fishing and oyster boats and ice barges. The Aaron pump is built in a variety of sizes and one can be found for any engine, whether as small as 2½ or as large as 500 horsepower.

The Rayfield Carbureter.

The Rayfield carbureter, made by the Findeisen & Kropf Mfg. Company, Chicago, Ill., acts both mechanically and automatically, the mechanical valve being operated in connection with a variable needle valve by the throttle. This combination produces great pulling power and great speed, at the same time giving economy and flexibility. The Rayfield has three air intakes—the constant air opening at low speeds, the mechanical valve, which operates in conjunction with the throttle when opened beyond the one-quarter point, and the automatic valve which acts as a governor. The carbureter can also be adjusted for high, low and medium speeds. Rayfield carbureters are designed to suit all makes of motors and the constantly increasing number now in use is a proof of the satisfaction which they have given. The Rayfield plant is equipped with a testing laboratory so that the manufacturers can not only learn how their carbureter does its work installed on the different types of gasoline engines, but its efficiency in operation when compared with other makes of carbureters. The Rayfield is made in two models, each in several sizes. While the two are practically identical in design, the Model D has a water jacket while the Model H is nonwater-jacketed and intended for those to whom size and price is an object.

Bosch Shows Up Well at Monaco.

The Bosch Magneto Company, New York City, are feeling justly proud of the showing made by boats equipped with Bosch ignition at the recent races at Monaco. Bosch equipped craft won all of the ten races, and in practically every instance the second and third places were also taken by boats having Bosch magnetos. Four of the winners had Bosch dual magnetos; four, Bosch two-spark magnetos, and two, Bosch independent magnetos. All employed Bosch spark plugs.

The Jewel electric row boat motor, showing the ease with which it can be installed.

A Paint Cleaner for Fresh or Salt Water.

The Myrlite Company of America, Pownal, Vt., are turning out a paint cleaner which, according to their statement, has given results that are really remarkable. Myrlite will work in either salt or fresh water and if the body of the paint is in good shape and has not been marred by scratches or rubbing, a thorough washing with Myrlite will give the boat the appearance of having been newly painted. The use of this cleaner makes it unnecessary to take a boat out of the water for a midsummer cleaning and if repainting is absolutely necessary, a Myrlite wash and one coat of paint will give as good results as two coats of paint, to say nothing of the saving in time and expense. Myrlite is obtainable in quantities of from 22 ounces up to about 200 lbs.; the small size can being sufficient for a small motor boat or canoe.

Sterling Powered Boat in Olympic Races.

The Sterling Engine Company, of Buffalo, N. Y., has just shipped a six cylinder 45-65 h. p. Sterling motor to be installed in a 43 ft. cruiser owned by G. Pott, of Stockholm, Sweden, which will take part in the Olympic Races at that city in June. The boat will race over a 60 knot course, 40 knots of which will lie in the open sea. She has a beam of 7 ft. 3 in. and it is expected she will develop a speed of 15 knots an hour or better. She has been christened Sterling, in honor of her power plant.

Turning a Rowboat into a Motor Craft.

The Jewel Electric Company of Chicago, Ill., are making a small detachable marine motor which should appeal to fishermen, huntsmen, motorists and in fact everyone who may have occasion to spend a few hours on the water some day in the course of a summer's pleasure trip. The Jewel row boat motor is electrically driven and weighs complete but 25 pounds. It can be packed under the seat of a motor car or in a suit case and attached in a few minutes to any row boat or canoe. For hunting and fishing, its noiseless operation is a feature that will be appreciated. The propeller serves both as a means for driving the boat and as a rudder. The current is supplied by two six-volt batteries connected in series. At the top of the motor is fitted the steering wheel, made of aluminum, and on this is mounted a three-speed waterproof rotary switch. If a lower speed is desired than is given by the switch, one battery can be disconnected. The entire machine is made of the best material and every detail of the construction is worked out in a practical manner with a view to the reduction of the number of parts to a minimum and simplicity of operation.

Increasing the Efficiency of Gasoline.

The Ellis gasoline purifier, made by the National Sales Company of Boston, Mass., is designed to get the full efficiency from the fuel by taking out the water, fine particles of paraffin, dirt, etc., found in commercial gasoline, leaving only an absolutely pure product with which the carbureter can do its work thoroughly. The Ellis purifier is installed in any convenient place on the gasoline supply pipe between the tank and the carbureter. Entering the precipitation chamber, the fluid is filtered through two fine screens, two felts and quartz, in which all dirt and small particles of paraffin are caught and held. Any water in the gasoline will lodge in the precipitation chamber because of its greater specific gravity and remain there, while the gasoline rises and passes through the filter. A slight turn of the thumb screw draws off any water or particles of sediment. Those who wish something more than an ordinary strainer will find that the Ellis filter fully meets their want. The Ellis purifier weighs about six ounces and sells for $3.50.

A New High-Speed Motor.

The Dean Mfg. Company, Newport, Ky., are producing a new high-speed engine which should interest racing men. This 60 h.p. machine, which is known as the model CC, Fox DeLuxe motor, combines the advantages of the three port and two port systems by the use of a rotary valve. This valve is a bronze cylindrical casting inside of an aluminum manifold connecting all the cylinders. The valve shaft is driven by a short shaft at the forward end of the motor through two sets of gears and the same shaft drives the Bosch DU4 model V magneto used for ignition. The water circulation is derived from a rotary gear pump located at the rear end of the rotary valve manifold and driven direct by the valve shaft. The water is distributed to each cylinder by the valve manifold without additional piping. A feature worth noting in this engine is the location of the rotary valve in such a position that it is not subject to pressure either from the cylinders or crank case, since the ports at the time of compression in the crank case and during the power stroke in the cylinder are covered by the piston. The use of the Fox fourth port accelerator insures a full crank case charge even when the motor is running at a speed of 1600 r.p.m.

Page Company in New Plant.

The Page Engineering Company of Baltimore, Md., makers of the Oriole engine, are now located in their new plant at Hull and Claggett streets. In connection with the plant, the company has opened a marine basin capable of giving safe harbor to 100 boats. The basin is at the foot of Hull street on the south shore of Locust Point, a short distance inside of Fort McHenry. There is a deep channel to the entrance and a watchman is always on duty. The new quarters not only give the company added facilities for manufacturing, but the maintenance of a thoroughly equipped machine shop manned by expert gas engine machinists under technical supervision offers an excellent opportunity for repair work on motors of all makes.

Michigan Company Features Steel 18-Footer.

The Michigan Steel Boat Company, Detroit, Mich., are offering a handsome 18-foot steel runabout for 1912, with seating capacity for ten persons and a speed of ten miles an hour, at the attractive price of $150. The boat is made of heavily galvanized steel, which is practically rustless, and is fitted with air-tight compartments as a safeguard against sinking. The power is supplied by a 3½ h.p. Detroit engine with all the latest improvements which in this special runabout is fitted, in place of the regular carbureter, with a patent fuel feeder which permits the engine to be run on gasoline, kerosene, alcohol or naphtha without any change of equipment. This device is the result of a number of years of experimentation and was perfected only about two years ago. The company claims that with the use of the fuel feeder backfiring is done away with and the risk of fire and explosion in the boat eliminated. The boat has a V-transom stern, a beam of 4 ft. 6 ins., and a draft of only about 14 inches. It is painted with aluminum paint, giving a handsome appearance and protecting the vessel from the effects of both fresh and salt water.

Diana, a St. Augustine winner, in action. She is driven by a 100-h.p., 8-cylinder Sterling.

A New Elco Cruiser.

The Electric Launch Company of Bayonne, N. J., have developed a new 36-foot raised deck cruiser to meet the demand for a really comfortable small cruising motor boat, which will at the same time be staunch, seaworthy and reliable and possess a fair rate of speed. Her dimensions are 36 ft. overall length, 8 ft. 8 in. beam and a draft of 2 ft. 4 in. The four cylinder 40 h.p. Elco engine is placed just forward of amidships and is easily reached through a hatch. On the starboard side another hatch gives entrance to the quarters forward, in which are located the galley and its appurtenances and a berth which can be utilized by the engineer or, if the owner operates the boat himself, can furnish additional sleeping room for his party. Amidships is a raised cockpit or bridge 8 ft. 6 in. long and the full width of the boat, and from this a companionway on the starboard side leads aft to the owner's quarters. The cabin has full 6-foot headroom and contains two wide transom berths with a double berth aft, providing sleeping accommodations for four persons. Underneath the berths are drawers and lockers with buffet lockers on each side of the cabin and a full length locker under the companionway. The lavatory is located on the port side and is entirely enclosed. The boat is designed for one man control. She will make about 12 miles per hour and at ordinary cruising speed will run about 25 hours without refilling her gasoline tanks.

A Liquid Calking Material for Spring Outfitting.

Anyone who has been through the outfitting season knows that calking is a very important part of the work to be done in preparing a boat to again go into commission. A dependable liquid calking material is made by the Petro Mfg. Company, Rockford, Ill. It possesses all the qualities necessary to make a perfectly water-tight boat and its efficiency is shown by the numbers of testimonials both from builders and individual owners which the company has received. The 1912 booklet describing Petro liquid calking and containing expressions of approval from its users, is now ready for distribution.

The Atlantic Clipper Life Boat.

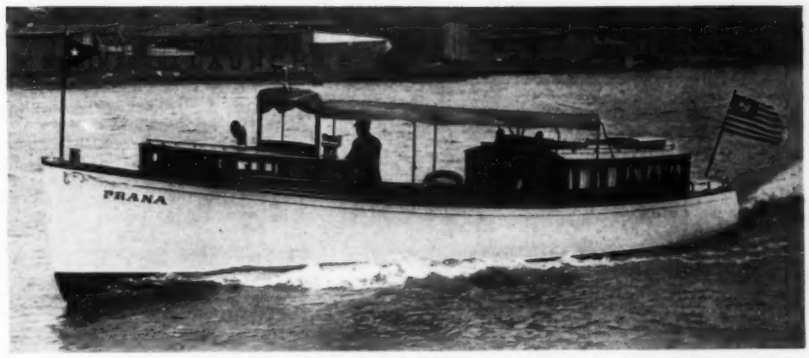
The Atlantic Company, of Amesbury, Mass., are building a semi-speed clipper motor boat which also qualifies as a lifeboat under the government requirements. The boat is 25 ft. overall, with a beam of 6 ft. and in addition to her lifeboat features, makes an excellent yacht tender, being strongly built and provided with hanging irons so that she can be swung from davits. She has a total of 19 cubic feet of air space divided into 12 cubic feet forward and 7 cubic feet aft, which is sufficient to float 22 people, the boat's rated capacity, together with the hull and machinery. On a test in Boston Harbor, one of these boats carried 23 persons or one more than the government rating. She has ample storage space for the equipment specified by the government regulations to be kept permanently aboard every lifeboat. Designs of the boat will be found on page 52.

Motor Canoes Growing in Popularity.

Three or four years ago the canoe driven by a gasoline motor was practically unheard of, while to-day there are very few stretches of protected water where at least one or two of these little craft cannot be seen. There are several reasons for this growth in popularity. The motor canoe has the lightness and grace of a canoe combined with the speed of a motor boat and drawing, as it does, but a few inches of water, it can go where a motor boat could never penetrate. When equipped with sponsons, a practically unsinkable craft is the result. A very good line of motor canoes is made by the Kennebec Boat and Canoe Company, of Waterville, Me. It is safe to say that anyone purchasing one of their craft of this type will find that he is possessed of a means of transportation that has possibilities for giving pleasure of which he never dreamed.

A Good Boat for Deep-Sea Fishing.

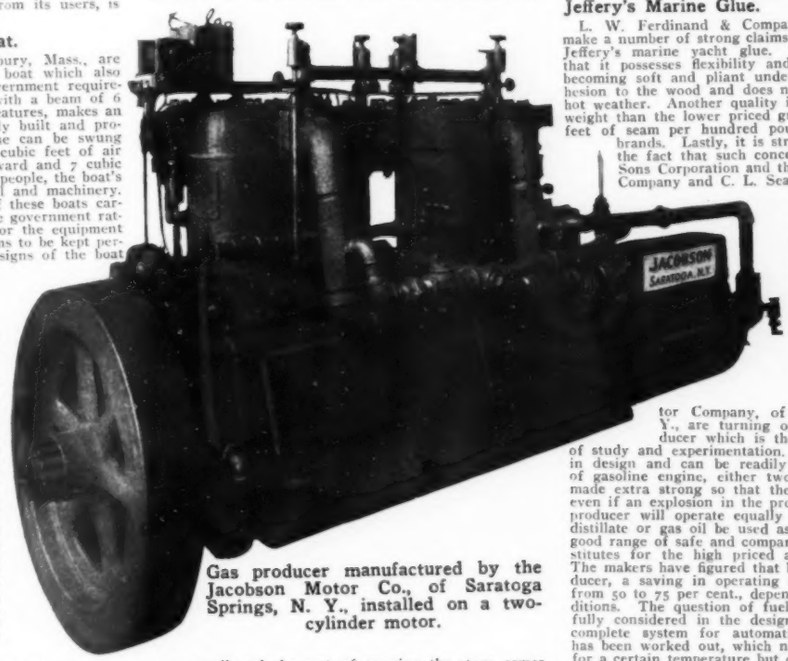
The Seabright dory shown on page 52 is now being completed at the shop of Henry E. Keller, Long Branch, N. J., for F. B. Alexander, of Seabright, N. J., and New York City, who is an enthusiastic deep sea fisherman. The boat has an overall length of 38 ft., 10 ft. beam and 6 ft. headroom in the cabin. She is planked with ¾ in. cedar, copper fastened, has white oak frames and cypress deck, covered with canvas. The interior is also finished in cypress. The engine room is separated from the cabin by a panelled bulkhead and the boat has a toilet and galley. The motive power is two 15 h. p. Mianus engines, giving her a speed of 12 miles per hour. She has 200 gallons gasoline capacity and a fresh water tank in the bow. Mr. Keller has found this type of boat so satisfactory that he intends to specialize on this design in all sizes.



Prana, a handsome 46-foot day cruiser built by the Gas Engine & Power Co. and Chas. L. Seabury & Co., Cons., Morris Heights, N. Y.

A Gas Stove for the Cruiser.

The question of preparing meals on a cruise often assumes the proportions of a very serious problem, especially when adequate facilities are not at hand. To help meet this problem, the Globe Gas Light Company, 27 Union street, Boston, Mass., have put on the market the Barthel Juwel yacht stove, which uses for fuel gas generated from kerosene. This stove gives a great amount of heat and burns absolutely without any odor. The gas is generated by forcing kerosene vapor through a burner which has been superheated by an alcohol flame. The fuel consumption is very small and the cost of running the stove comes to only about one cent per hour. One great advantage is that the stove is absolutely safe, and even should it be overturned while ignited the flame would be immediately extinguished and no fire would result. The Barthel Juwel is made in a number of different styles for various kinds of service.



Gas producer manufactured by the Jacobson Motor Co., of Saratoga Springs, N. Y., installed on a two-cylinder motor.

Lighthouse Post Cards.

The Lighthouse Mission has a splendid line of post card views, both plain and colored, which is well worth the attention of anyone interested in this subject. The list of subjects includes practically every country in the world which has a lighthouse service. Views are also carried of Irish scenery, etc. The complete list of these cards and two sample views will be sent to any address for the inconsiderable sum of 5 cents. Inquiries should be addressed to the Lighthouse Mission, Dept. M. B., The Lighthouse, Belfast, Ireland.

Wisconsin Engines at Milwaukee.

The Wisconsin Machinery & Mfg. Company, Milwaukee, Wis., will show a complete line of Wisconsin valveless motors in space No. 40 at the Eighth Annual Gas Engine Show to be held during the week of June 17th to 22nd, at the Milwaukee Auditorium. The Wisconsin "All-in-One," consisting of a two cylinder 10 h. p. motor with reverse gear and rear starter on one base, will be shown for the first time. This unit power plant has double ignition with two spark plugs, one wired to the coil and one to the high tension magneto, on each cylinder.

Jeffery's Marine Glue.

L. W. Ferdinand & Company of Boston, Mass., make a number of strong claims for their extra quality Jeffery's marine yacht glue. The first of these is that it possesses flexibility and durability and while becoming soft and pliant under heat, retains its adhesion to the wood and does not stick to the feet in hot weather. Another quality is that being lighter in weight than the lower priced grades, it will pay more feet of seam per hundred pounds than the cheaper brands. Lastly, it is strongly recommended by the fact that such concerns as Geo. Lawley & Sons Corporation and the Gas Engine & Power Company and C. L. Seabury & Co., Cons., use it exclusively. The company claim that if properly used and not over-heated, it will last four to six years in a seam and has been known to last from ten to twelve years. L. W. Ferdinand & Company also make cheaper glues in various grades.

A Well-Made Gas Producer.

The Jacobson Motor Company, of Saratoga Springs, N. Y., are turning out a kerosene gas producer which is the result of many years of study and experimentation. This device is simple in design and can be readily attached to any make of gasoline engine, either two or four cycle, and is made extra strong so that the operator runs no risk even if an explosion in the producer does occur. The producer will operate equally well whether kerosene, distillate or gas oil be used as fuel, thus providing a good range of safe and comparatively inexpensive substitutes for the high priced and dangerous gasoline. The makers have figured that by the use of their producer, a saving in operating cost can be effected of from 50 to 75 per cent., depending on local price conditions. The question of fuel supply has been carefully considered in the design of this device and a complete system for automatically feeding the fuel has been worked out, which not only can be adjusted for a certain temperature but can be regulated to take a small amount of gasoline until the proper adjustment has been made for the speed and load required of the engine. The Jacobson producer is compact and takes up but little room. For a medium speed four cylinder 50 h.p. marine engine, it would be about 24 inches long and 7 inches in diameter. It is made in standard sizes of from 1 inch exhaust connection to 4 inches inclusive. Larger sizes are specially designed, if desired. The producer is sold with a 30-day trial agreement so that the purchaser can satisfy himself that he is getting something well worth his money.

Cleveland Supply Company Moves.

The Motor Boat & Supply Company of Cleveland, Ohio, is now located in its new quarters at 1411-15 West 9th street, corner of Frankfort avenue, where a large stock of gasoline marine engines and motor boat accessories will be carried. The company recently made a stir in motor boating circles by donating, in connection with the Eagle Company of Newark, N. J., a completely equipped motor boat as a prize for the Inter-Lake Yachting Association Regatta at Put-In-Bay. The hull and equipment were furnished by the Supply Company while the Eagle Company gave the engine. The unique conditions under which this prize will be contended for were described in May MoToR BoatinG.

Gurney Designs a New 28-Footer.

The Cape Cod Power Dory Company of Wareham, Mass., are building a 28 ft. x 7 ft. model of the whale boat type, which their architect, Gurney, designed with a view to obtaining as seaworthy a boat as could be built in that size. Several boats of this type were constructed last fall and were used for off-shore fishing near Provincetown right through the winter under the most trying weather conditions. The interior arrangements can be varied to suit the requirements of the owner. A cabin can be built which will accommodate two men, with arrangements for a stove and a fish well, or the boat can be left entirely open. The seaworthy qualities of this model make it an excellent type for off-shore pleasure parties.

Pinta, a 40-foot power tug recently built in Boston, for the Central Aguirre Co., for service in Porto Rico. She has a Sterling engine.

Calendar.

JUNE.

9th. Excelsior Yacht Club, Brooklyn, N. Y. Open handicap race. Twice over the long club course—21 miles.

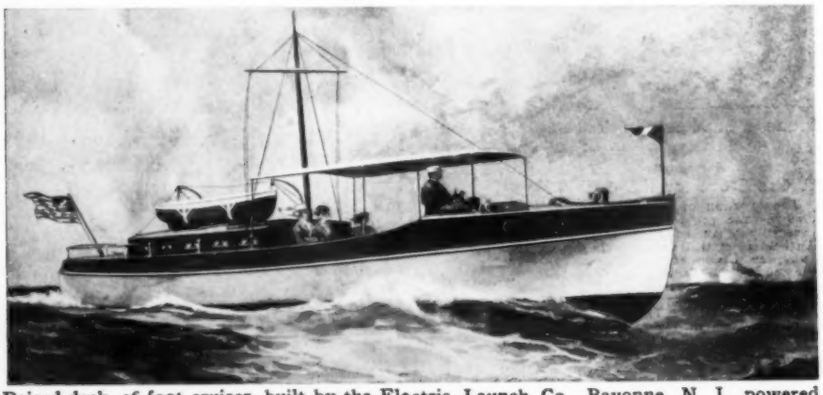
22nd. New York Athletic Club. Annual race to Block Island, starting from Huckleberry Island, off New Rochelle.

22nd and 23rd. Tappan Zee Yacht Club, Grand View-on-Hudson. Race from Grand View to Kingston and return for the Disbrow cup. Cabin cruisers up to 45 feet.

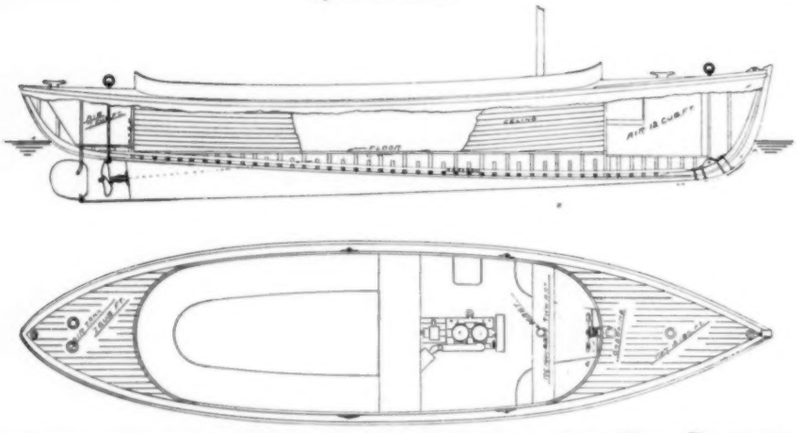
24th. Delaware River Yacht Racing Association. Cruiser race for championship of the Delaware river. Keystone Yacht Club, Philadelphia, Pa., to Overfalls light and return.

29th. Maryland Motor Boat Club, Baltimore, Md. Race from Ferry Bar to Point No Point and return. 200 miles. Boats 40 feet and over. A. P. B. A. rules. Address, W. F. Tanner, Sec'y Racing Board, 329 No. Calvert street, Baltimore.

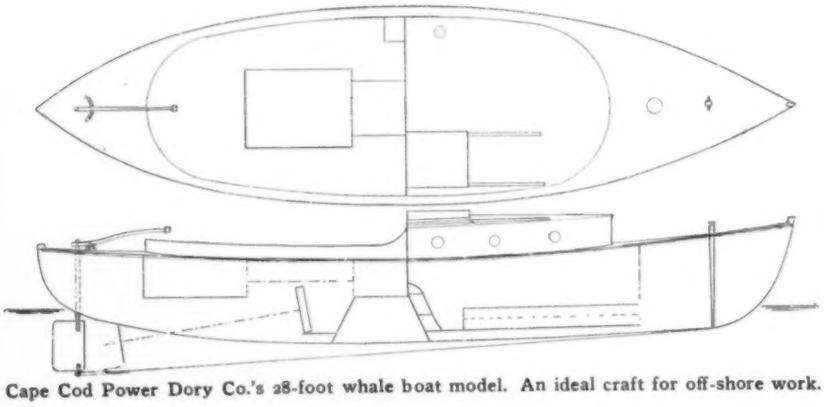
29th and 30th. New York Motor Boat Club. Race from New York to Albany and return. 235 nautical miles. Start and finish at the club house, 147th street and Hudson river. Boats under 40 feet.



Raised-deck, 36-foot cruiser, built by the Electric Launch Co., Bayonne, N. J., powered with a 40-h.p. Elco engine. She has a speed of 12 miles per hour. From original drawing by G. A. Coffin.



Clipper motor boat manufactured by the Atlantic Co., Amesbury, Mass. She measures 25 feet over all and conforms to the government requirements for a life boat.



Cape Cod Power Dory Co.'s 28-foot whale boat model. An ideal craft for off-shore work.

Seabright dory, 38 feet by 10 feet, built by Henry E. Keller, Long Branch, N. J. She has full 6 feet headroom in the cabin.

JULY.

1st and 2nd. Pacific International Power Boat Association. Long distance cruising race. Vancouver, B. C., to Tacoma, Wash. 225 miles. Finish at Tacoma Yacht Club.

3rd. Portland Power Boat Association, Portland, Me. Association cruise to Camden and return, starting from Boothbay Harbor.

4th. Hudson River Yacht Racing Association. Races at the Tappan Zee Yacht Club, Grand View-on-Hudson.

4th. Chesapeake Bay Yacht Racing Association. Motor boat and sailing races on Patapsco river.

4th, 5th and 6th. Mississippi Valley Power Boat Association. Regatta at Davenport, Ia. Cruising race to Muscatine, Ia., and return.

6th. Colonial Yacht Club, New York. Cruiser race from club house, 140th street and North river, to Cornfield Point light ship and return, 138 nautical miles. A. P. B. A. rules.

6th. Yachtsmen's Club of Philadelphia. Annual ocean race. Atlantic City to Winter Quarter lightship and return. 178 nautical miles. A. P. B. A. rules.

14th-20th. Inter-Lake Yachting Association. Regatta at Put-In-Bay, Ohio.

20th. Chesapeake Bay Yacht Racing Association. Start of annual cruise.

20th to 22nd. Hudson River Yacht Racing Association. Cruise from New York and Albany to Poughkeepsie.

22nd to 27th. Detroit, Mich. Cadillaqua.

23rd, 24th and 25th. Pacific International Power Boat Association. Puget Sound Championship races, at Lake Whatcom, Wash., under the auspices of the Lake Whatcom Motor Boat Club of Bellingham.

27th. Bermuda Race. Annual race for the Bermuda Challenge Cup, under the auspices of the Yachtsmen's Club of Philadelphia. Start off Race Street Wharf, Philadelphia. Finish off St. George's, Bermuda.

30th to Aug. 7th. Scripps Cruise. Reliability cruise for the Commodore Wm. E. Scripps trophy. Detroit, Mich., to Hamilton, Ont.

AUGUST.

8th, 9th and 10th. Great Lakes Power Boat League. Third annual regatta at Hamilton, Ont., under the auspices of the Royal Hamilton Yacht Club.

10 to 17th. Western Power Boat Association. Championship races and water carnival at Chicago, Ill.

16th. Camden Motor Boat Club, Camden, N. J. Race from Camden to New York.

21st. Keystone Yacht Club, Philadelphia, Pa. Cruiser race, Wilmington, Del., to Ship John light and return.

22nd, 23rd and 24th. Pacific International Power Boat Association, Pacific Coast Championship races at Astoria, Ore., under the auspices of the Astoria Motor Boat Club.

26th, 27th and 28th. Motor Boat Club of America. Elimination trials for Harmsworth cup race, at Huntington, L. I.

31st. Delaware River Yacht Racing Association. Races at the Riverton Yacht Club, Riverton, N. J.

31st to September 2nd. Hudson River Yacht Racing Association. Races at New York Motor Boat Club.

31st to September 2nd. British International Trophy Races, for the Harmsworth cup at Huntington, L. I.

SEPTEMBER.

14th. Delaware River Yacht Racing Association. Motor boat races at the Camden Motor Boat Club, Camden, N. J.

21st. Delaware River Yacht Racing Association. Cruiser race.

29th. New York Motor Boat Club. Rockland light race.

(Yard and Shop continued on page 66.)

MOTOR BOATING ADVERTISING INDEX

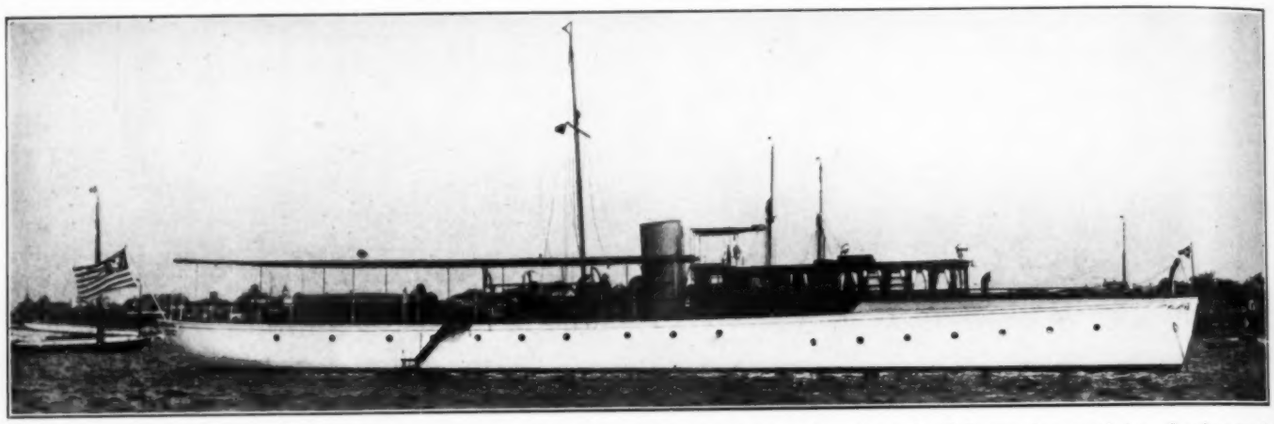
COX & STEVENS

NAVAL ARCHITECTS AND YACHT BROKERS

Telephone
1375 Broad

15 William Street
New York City

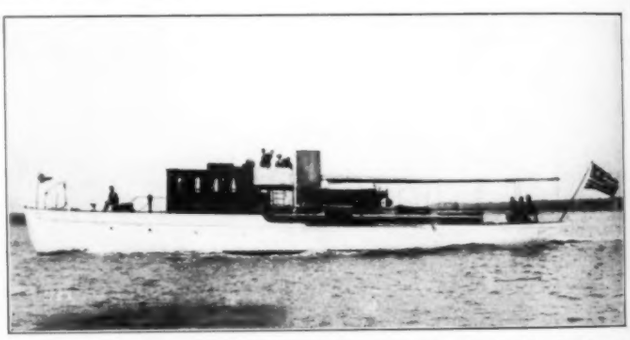
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars mailed on request.



No. 885.—For Sale or Charter.—Exceptionally handsome, fast, steel, twin screw cruising power yacht; 118 x 16.6 x 5 ft. Built 1910, from our design. Speed up to 18 miles; two 300 H. P. Craig motors, three double staterooms, main and dining saloons, two bathrooms, electric lights, etc.; handsomely finished and furnished. Probably the most desirable proposition ever offered in a large gasoline yacht. Apply to Cox & Stevens, 15 William St., New York.

No. 1334.—For Sale.—Fast 99 x 14 ft. twin screw power yacht. Speed 16-19 miles. Three double staterooms, bath, etc. Handsomely finished. Cox & Stevens, 15 William St., New York.

Please mention MOTOR BOATING.



No. 464.—Excellent Bargain.—81 x 13 ft. power yacht; Lawley build. Speed 13-15 miles; 100 H. P. Standard. Two double staterooms, dining and main saloons, etc. Cox & Stevens, 15 William St., New York.

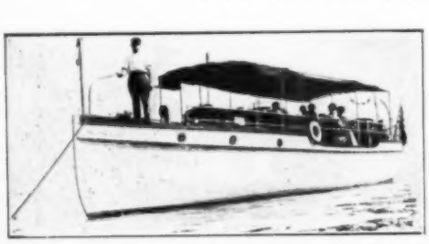
Please mention MOTOR BOATING.

No. 1532.—For Sale.—Practically new 75 x 13.6 ft. twin screw cruising power yacht. Speed 12-14 miles. Three staterooms, bath, dining saloon fwd., etc. Best of type and size available. Cox & Stevens, 15 William St., New York.

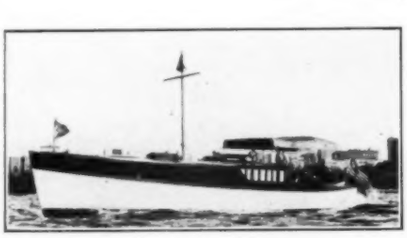
Please mention MOTOR BOATING.

No. 470.—For Sale.—Raised deck cruiser, 60 x 12 x 3.6 ft. Speed 11 miles; 40 H. P. motor. Double and single stateroom, large saloon, electric lights. Very able and in first-class condition. Price attractive. Apply to Cox & Stevens, 15 William St., N. Y.

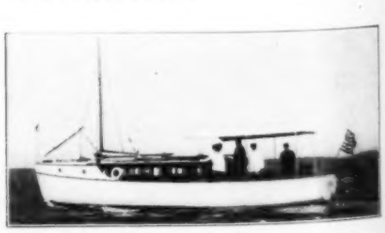
Please mention MOTOR BOATING.



No. 668.—Exceptional Bargain.—50 ft. bridge deck cruiser. Speed 11 miles; 25-35 H. P. Standard. Two staterooms, saloon, bath, etc. In commission. Cox & Stevens, 15 William St., New York.



No. 1525.—Bargain.—Handsome 47 x 10.6 ft. power cruiser; built 1910. Speed 10 miles. Double stateroom, saloon, toilet room, etc. Mahogany finish throughout (including planking). Owner building larger. Cox & Stevens, 15 William St., New York.



No. 1596.—Excellent Bargain.—42.6 x 8.6 x 2.8 ft. raised deck cruiser. Built 1909. Speed 10 miles; 16-20 H. P. 4-cylinder Standard motor. Owner has larger. Apply to Cox & Stevens, 15 William St., N. Y.

HENRY H. JENNINGS, 20 years
HERMAN JAGLE, 14 years
} with the late **MANNING'S YACHT AGENCY** are now in business under the name of

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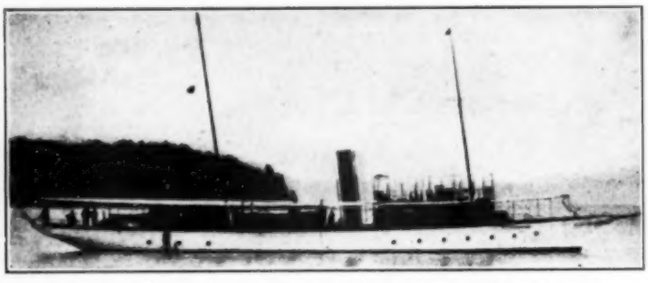
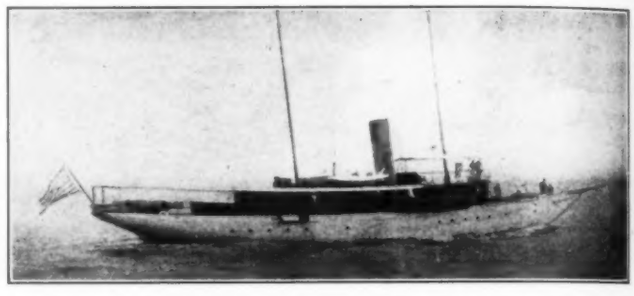
MORAVIA ANTI-FOULING PAINTS

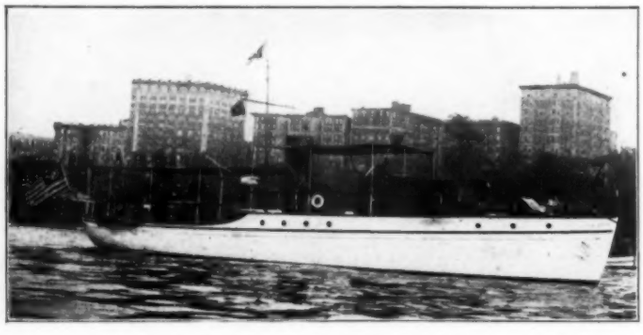
Our list comprises all the available yachts for sale and charter. Below are a few of our offerings. If none of these appeal to you write us your requirements.



1485.—150 foot steel steam yacht; speed 18 miles. Exceptional bargain.
Please mention MOTOR BOATING

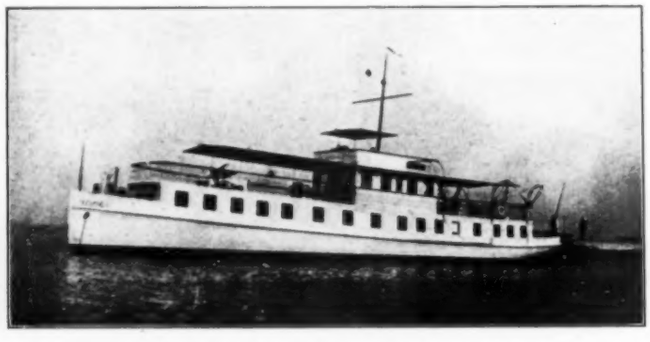


3019.—130 foot steam yacht. Price low. Will exchange for gasoline cruiser.
Please mention MOTOR BOATING.

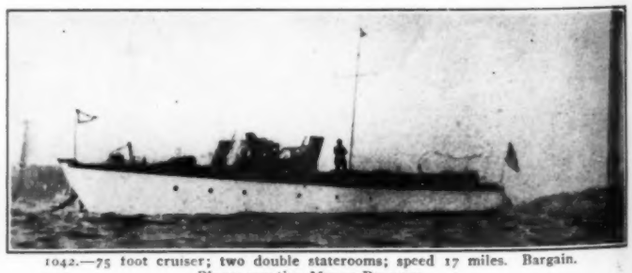


1238.—75 foot twin screw. Practically new. Speed 14 miles.
Please mention MOTOR BOATING.

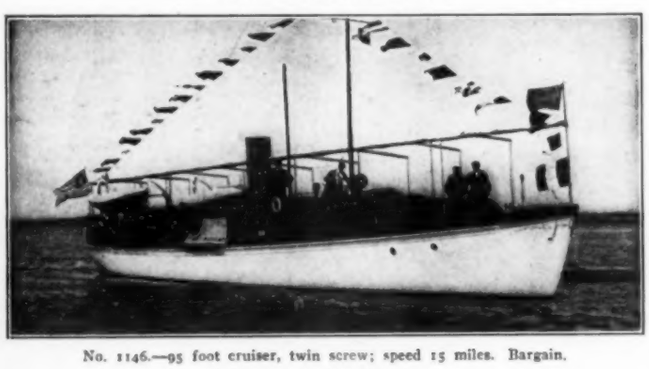
1004.—60 foot cruiser. Speed 12 miles.
Please mention MOTOR BOATING.



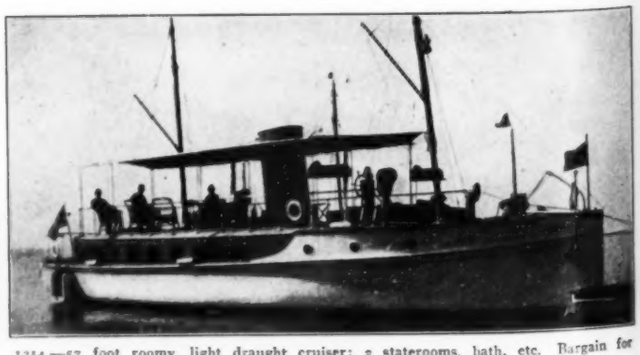
4068.—Charter only. 110 foot twin screw houseboat. Speed 10 miles.
Please mention MOTOR BOATING.



1042.—75 foot cruiser; two double staterooms; speed 17 miles. Bargain.
Please mention MOTOR BOATING.



No. 1146.—95 foot cruiser, twin screw; speed 15 miles. Bargain.
Please mention MOTOR BOATING.



1214.—57 foot roomy, light draught cruiser; 2 staterooms, bath, etc. Bargain for quick sale.
Please mention MOTOR BOATING.

THE MOTOR BOATING MARKET PLACE

Opportunities for the Motor Boatman

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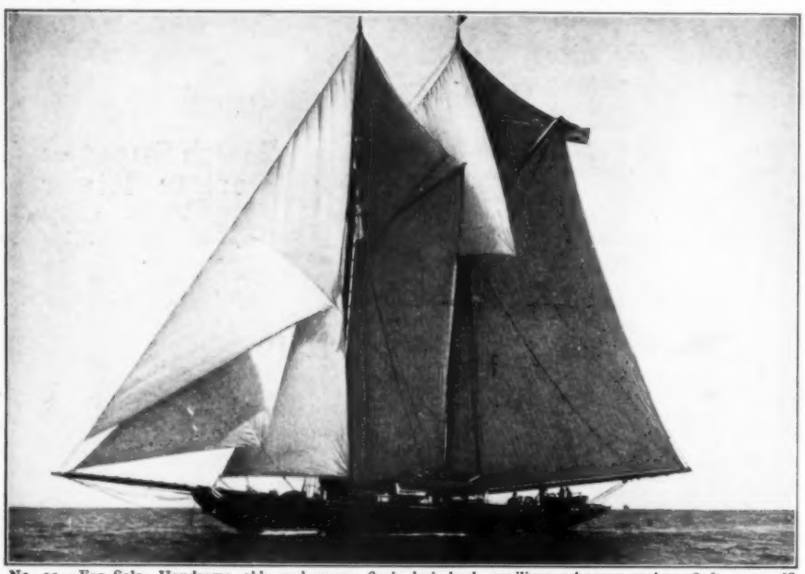
Cut one inch deep, one column wide..... $2
Cut 1½ ins. deep, 1½ columns wide..... $3
Cut three inches deep, three columns wide..... $10

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention Motor Boating.



No. 15.—For Sale—Handsome, able and roomy flush deck keel, auxiliary schooner yacht; 98 ft. o. a., 68 ft. w. L., 20 ft. beam, 9 ft. draft. Recent build. One double and two single staterooms, large saloon, bathroom, two toilets, acetylene lights, etc. Speed under power 9 miles; 50-60 H. P. Standard motor (installed 1910). Handsomely finished and furnished. Price attractive. Apply to Cox & Stevens, 15 William St., New York.

BARGAIN ON FAST RUNABOUT—21' x 3' 6"; speed, 18 m. p. h., with 20 H. P. Roberts. Hull in good condition. Price for quick sale, $85.00, including auto steering wheel, strut, rudder, 24-gallon gas tank, etc. Ready for engine. Address R. W. Angstman, Feick Apts., Sandusky, Ohio.

$225 buys a 28 x 6 ft. power boat, full equipment, speed nine miles. Will sell with or without engine. ARTHUR T. BENNER, 759 Tremont Street, Boston, Mass.

FOR SALE—26' x 4' high speed runabout; hull first-class condition; will do 23 miles an hour with 35 to 40-horse. Will sell either hull alone or complete boat with engine at bargain price. Loew Mfg. Co., Cleveland, Ohio.

A BARGAIN—6 H. P. Smalley engine; A1 condition; complete marine equipment; reversible wheel; $65.00. Wm. Poch, Petoskey, Mich.

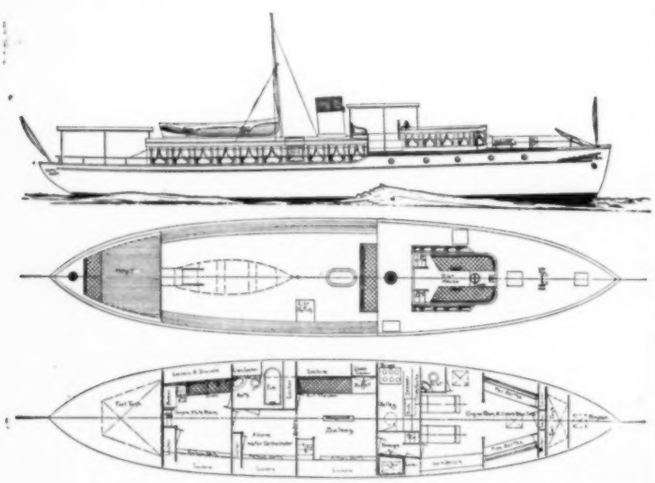
FOR SALE—Raised Deck Cruiser, 25 x 6; equipped with 12 H. P. 2-cylinder Gray motor—reverse gear, toilet, anchor, lights, tools, horn, bell, life preservers, fenders, hair-filled cushions; launched in 1911.
Apply to T. C. FOSS,
473 Congress St., Portland, Me.

$6,000. seagoing cruising yacht, $1,875; 50 ft., sleeps eleven. Modern conveniences; solid mahogany and quartered oak construction. Brand new, now building. Modern Yacht Co., Bath, Maine.

FOR SALE: The launch "Polly," 21 ft. long, 5 ft. beam, with new two-cylinder 6 H. P. "Cady" engine; boat overhauled thoroughly last year and in excellent condition; price $350. Can be seen in Stamford, Conn. Address L. V. Fox, 240 E. 136th St., N. Y. City.

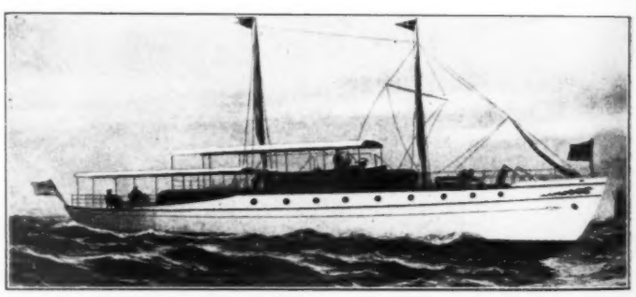
BOSCH low tension Make and Break magnetos, "A-1" condition, $12.00. Pellet's Magneto Exchange, 1463 Michigan Ave., Chicago, Ill.

BEST BARGAIN ON MARKET
$975.00—New 40-foot Cruiser; Beam, 8½ feet; Draft, 30 inches; Speed, 10 miles. Fairbank Victor Engine, 360 R.M.; 26-inch propeller. Strongest wood-built boat in America. Natural growth keel. Stem and timbers hardwood finish. Salt water fittings. Heavy plate glass windows, complete with railway car and mooring buoy. Address Box 254, Aberdeen, Md.

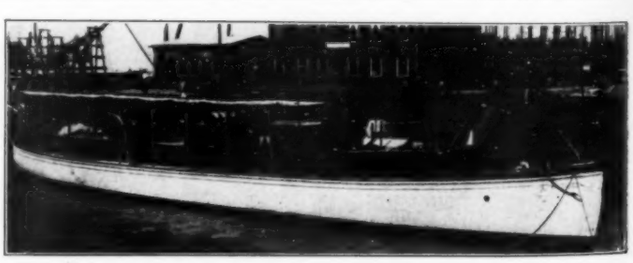


No. 2666.—For Sale—Very high-class Motor Yacht. Built from our designs; completed this last November, and has had but 3 months' cruising in Florida. We are designing much larger yacht for owner, which is his reason for selling. Boat has given very best satisfaction, proving able, reliable, and an ideal cruiser for coast and Florida cruising. Dimensions—67 ft. length; 14 ft. beam; 3 ft. draft; twin screw; 2-40 H.P. Heavy Duty Sterling Engines. Most complete electric lighting plant; latest Edison batteries, elaborately furnished; 12 ft. motor tender and rowboat; very best of condition throughout; completely equipped for extensive cruising. Yacht will be sold in first-class running condition. Now in commission in New York. Blueprints and full particulars from Whittelsey & Whittelsey, No. 11 Broadway, N. Y. Tel.—Rector 4718.

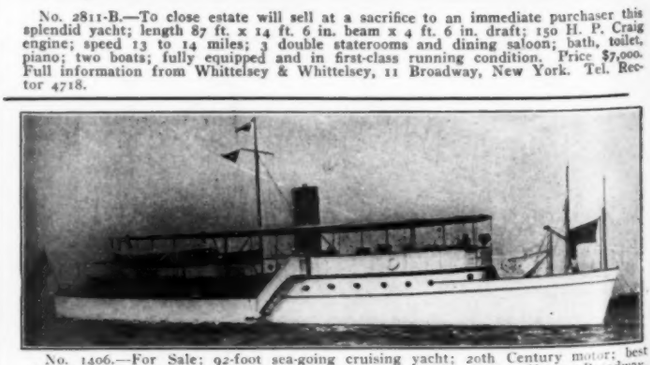
For Sale.—35 foot Elco express launch seating 8 people, speed 24 miles an hour, 6 cylinder 75 H. P. Peerless engine, used only 6 weeks; perfect condition. Price $2,000. Apply to F. W. Sewell, 1964 Broadway, N. Y. C.



No. 2816-B.—Sale or Charter.—75 ft. motor cruiser, twin-screw, electric lights, full commission New York; double and single stateroom, bath room, large saloon, galley, engine room, all complete. Plans and full information, Whittelsey & Whittelsey, 11 Broadway, New York. Tel. Rector 4718.



No. 2811-B.—To close estate will sell at a sacrifice to an immediate purchaser this splendid yacht; length 87 ft. x 14 ft. 6 in. beam x 4 ft. 6 in. draft; 150 H. P. Craig engine; speed 13 to 14 miles; 3 double staterooms and dining saloon; bath, toilet, piano; two boats; fully equipped and in first-class running condition. Price $7,000. Full information from Whittelsey & Whittelsey, 11 Broadway, New York. Tel. Rector 4718.



No. 1406.—For Sale: 92-foot sea-going cruising yacht; 20th Century motor; best furnished and fitted yacht of her size on the coast. Gielow & Orr, No. 52 Broadway, New York.

THE MOTOR BOATING MARKET PLACE

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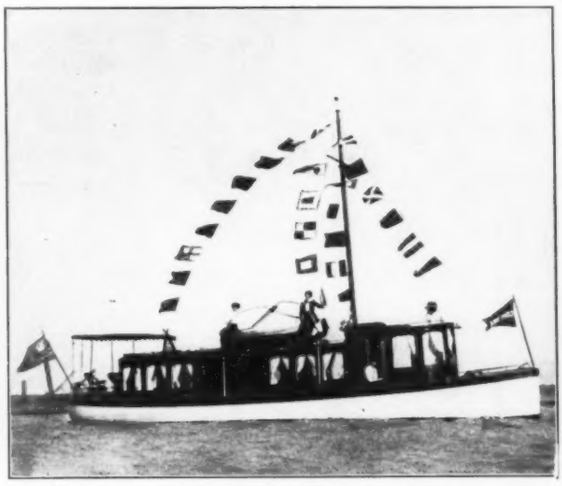
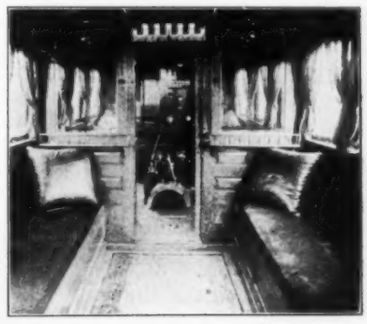
Section of owner's stateroom.

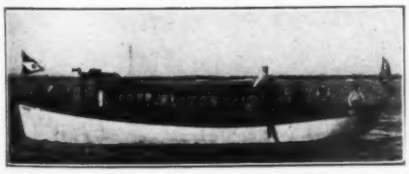




Section of saloon facing engine room.

DON'T purchase a boat until you have sent for description and photographs of this beautiful full cabin cruiser, the most elegantly appointed craft of her size on the Great Lakes. Thoroughly seaworthy. 45 x 9 ft. Speed ten miles. Sleeping accommodations for eight. Owner's stateroom with double berth and player piano. Large saloon with two double extension berths. Forty horsepower motor. Electric lighting. Auxiliary sail. Fully found. A rare bargain.
FRANK S. WINSLOW, 30 NORTH DEARBORN STREET, CHICAGO, ILL.

FOR SALE.
The Gasoline Yacht "Hurrion."
80 ft. long, 11 ft. 10 in. beam, 36 in. draft, twin screw. 2-90 H. P. Craig Engines, electric lighting; mahogany interior finish; main saloon has 4 double Pullman berths, also commodious owner's cabin. Ample accommodations for crew. Fully equipped and furnished. Ready to put in commission. May be seen at Marine Basin, Bath Beach. Must be sold. A bargain for a quick buyer.
Apply to J. CHAS. O'BRIEN, 141 Broadway, New York.



No. 226.—Finely appointed glass cabin cruiser, 40 x 9 x 2 ft. 6 in.; new last summer; electric lights and the most complete inventory; 25 H. P. 1911 Doman motor; all perfect condition. Great bargain to quick buyer. W. F. Ruddock, 120 Liberty St., New York.

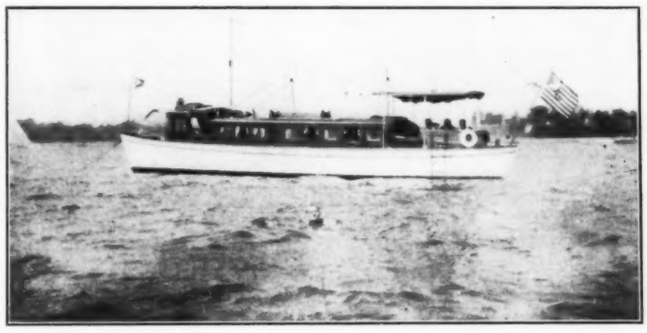
PLEASURE YACHTS FOR SALE
At One-half the Cost of Construction.
Elegant family steam yacht "Edith," 60 x 10 feet, compound condensing engines, Roberts tubular boiler, mahogany finish.
Beautiful yacht "Nirvana," 54 x 10 feet, full cabin, cherry finish, power tender, 3-cylinder, 6 x 6 gasoline engine of Standard make, fully equipped; a most complete cruising outfit.
Steam yacht "Oriole," 35 x 7 feet, compound engines, Roberts boiler, fuel oil or coal, the biggest kind of little cruising outfit.
Open fast yacht, 30 x 5 feet, 2-cylinder, Fairbanks gasoline engine, cherry finish, complete.
For leaflet containing detailed description, photo-lithograph and prices, address J. W. & C. C. Truesdell, 119 Bastable Block, Syracuse, N. Y.

WELDING.
Cracked Cylinders and all Broken Castings in any Metal SECURELY Welded and GUARANTEED at about one-half the cost of a new part. NATIONAL Welding & Mfg. Co., Incorporated, 527 Jackson Boulvd, Chicago, Ill.

1—MacLachlan Single-Acting Compound Steam Engine, has two high pressure cylinders and two low pressure; 20 h. p. at 600 r. p. m. This engine is reversible under full load. It is in fine shape in every way and will make an ideal engine for a steam launch or dry cleaning plant. Price, $250.00. S. F. Bowser & Co., Inc., Fort Wayne, Ind.

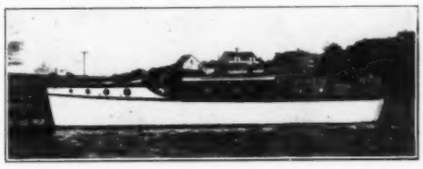
BARGAINS in Palmer motors, factory rebuilt and guaranteed. E. E. Palmer, 31 East 21st St., City.

1—Roberts Marine Motor, Model 4M, 20 h. p., at 900 r. p. m. This is a 4-cylinder, 2-cycle engine; bore, 4 in.; stroke, 3½ in.; equipped with mechanical force feed oiler and is in A1 shape in every way. It weighs about 375 pounds. Four-coil ignition outfit. Price, $250.00. S. F. Bowser & Co., Inc., Fort Wayne, Ind.



No. 3790.—For Sale.—Cruising launch, 45 x 9.6 x 2.9 feet draught; built in 1909 by the New York Yacht, Launch and Engine Co.; 20th Century 24 H. P. motor; dynamo and storage batteries; two can sleep in pilot house, two in cabin; is well found; practically in commission. Full particulars and inspection permit from Gielow & Orr, 52 Broadway, New York.

20 ft. cabin cruiser, well equipped. Price $500 delivered Long Island Sound near New York. A. P. G., care Motor Boating.



For Sale.—36 ft. cruiser, 7 ft. 9 in. beam, 36 H. P. engine; bridge control; electric light plant; fully equipped; bargain. Inspected at Elco Works, Ave. A, Bayonne, N. J.

HANDSOME semi-speed runabout, like new, 22 x 5½, varnished oak decks; 9 H. P. 2 cylinder motor, under cover. Completely equipped, sprayhood, canvas cover, etc. 11 miles. Vicinity Brooklyn. Bargain, $325. B. E. W., care Motor Boating.

FOR SALE—Handsome 25 x 5 Auto Controlled Runabout. Speed, 15 miles per hour; $600. Photo on request. Weber, 595 West 178th St., N. Y. City.

FOR SALE—10 brand new Goshen marine engines at less than cost. State H. P. wanted. L. E. Ihrig, Goshen, Ind.

SCORED cylinders repaired, $12 each. No enlargement of bore—no need for new pistons and rings. Send piston with cylinder. Absolutely reliable method. Better investigate and save money. References, testimonials and full details on request. Waterbury Welding Company, Waterbury, Conn.

USE "SNAPPER" ENGINES for your small boats. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

CANADIANS, Second-hand engine bargains. Send for list. Guarantee Motor Company, 73 Bay Street, North, Hamilton, Ont., Canada.

No. 419.—Beautiful auxiliary sloop, 63 x 17; four cylinder engine; three staterooms; mahogany finish; power tender and gig; 16 tons lead. All elegantly and completely appointed. A good speculation if you don't want to use her. Sacrifice at $2,100. W. F. Ruddock, 120 Liberty Street, New York.

BROKEN cylinders and other automobile parts of cast iron and aluminum made good as new by autogenous welding at about one-fourth cost of new ones. Shipment made within 24 hours from arrival. Guarantee, references and indisputable evidence for the asking. Waterbury Welding Works, Waterbury, Conn.

FOR CHARTER—By day or week, cruiser "LILY," completely equipped, electric lights, lavatory, galley, icebox, etc. Otto Thomas, 324 E. 89th St., N. Y. 'Phone Lenox 5123.

WANTED—Carpenters, joiners, boat builders, painters, and men to install and test Marine Gas Engines. Steady work at good wages to satisfactory mechanics. THE MATTHEWS BOAT COMPANY, Port Clinton, Ohio.

A Great Bargain.—15-20 H. P. twin cylinder, two cycle marine motor complete with K. W. spark coils and including bronze speed propeller, gasoline tank and piping, stuffing box shafting, tiller rope, batteries, wheel, rudder, wire and switch; $100 for quick sale. H. B. Craig, Paducah, Kentucky.

For Sale, a Bargain.—1911 Model T., 3 cylinder, 21 H. P. Gray motor, aluminum base; Paragon reverse gear on extended base; guaranteed to be absolutely as good as new; used only a few weeks. Price $275.00. This outfit cost $473.00 at factory. Address R. T. Gallagher, Washington, North Carolina.

NEW 54 H. P., six-cylinder Elbridge engine, just from factory. Aluminum manifolds, base and cylinder heads, extra finish throughout. Built for Mr. Coleman du Pont of Wilmington, Del.; exchanged for a larger power. Price $700. Emerson Engine Co., Alexandria, Va.

FOR SALE AND CHARTER—Sail and motor boats of all types, suitable for the Great South Bay. Frank M. Weeks, 272 River Ave., Patchogue, L. I.

Yard and Shop.

(Continued from page 52.)

New home of the Motor Boat and Supply Co., West 9th St., Cleveland, O.

A Correction.

In the paragraph and illustration which appeared in May MoToR BoatinG on page 51 of the 110 ft. steel cruiser Elemasada II, built for Daniel Good of Buffalo, it was stated in error that she was being built at the yards of Whittelsey and Whittelsey. As a matter of fact, although designed by Whittelsey and Whittelsey, she is being built at the yards of Kyle & Purdy, Inc., City Island, New York.

The Shaw Centripetal Propeller.

The Shaw Propeller Company, 156 State street, Boston, Mass., is putting on the market a patented propeller called the "Shaw Centripetal Propeller," an invention of the late Henry F. Shaw, well known as a mechanical expert and inventor. It is Mr. Shaw's claim for his wheel that the shape of the blades throws all of the water that come within their field of action inwardly, as well as throwing it to the rear and thus by keeping the water within working distance of the propeller blades, gives the wheel a body of water to act upon at all speeds. It is further claimed that this propeller will not drag down the stern of a displacement boat and will thus increase her speed.

A Good Line of Lights.

Motor boat owners who have studied the list of equipment requirements under the motor boat law will be interested in the "Electroil" combination oil and electric light bodies made by H. A. J. Helrig, of 212 Pearl street, New York City. These include a combined light for class 1 motor boats with lenses of fresnal glass, as required by the 1912 regulations, selling at $6 galvanized, or $7.50 in brass, as well as bow and side lights, in both brass and galvanized iron, for boats of classes 2 and 3. Stern or anchor lights are furnished with 3 and 4-inch glasses, either brass or galvanized. These lights are guaranteed to burn under all conditions as long as there is oil and a wick, and are so designed that they take up less space than the ordinary marine light.

A Really Waterproof Fabric.

E. A. Armstrong, 209 W. Kinzie street, Chicago, Ill., claims the three cardinal virtues of lightness, durability and absolute imperviousness to water for his Impervo waterproof clothing, and says furthermore that the fabric does not contain a particle of rubber. Impervo has been on the market now for about four years and its steadily increasing use lends a good deal of color to the manufacturers' claims for it. In fact, no less a person than Commodore Thos. Day equipped himself with a coat of Impervo when he made his famous trip across the Atlantic in the yawl Seabird.

A Lubroleine lubricant for grease cups.

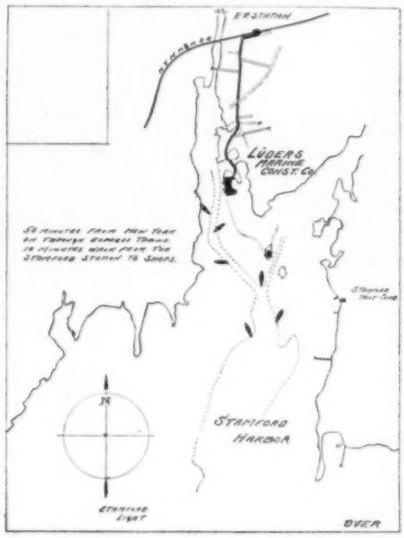
The Uses of Lubroleine.

The mission of Lubroleine motor oil, made by the Fiske Bros. Refining Co. of New York City, is to "make motors make good." That it has succeeded in its mission is testified to by the number of satisfied users. Lubroleine motor oil is made in crystal, light, medium and heavy grades. The first is a clear, water-white oil of low cold test, medium consistency and absolutely free from carbon-forming properties. The light and medium grades are advised for water-cooled and the heavy grade for air-cooled motors. Lubroleine "extra" motor oil is a heavy lubricant intended for air-cooled motors, for single cylinder water-cooled motors, and in fact for any engine developing high compression and putting great strain on the crank shaft bearings. It is therefore recommended for high power racing engines and aeroplane motors. The company also makes gear lubricants and greases for all conditions of service. As noted in May MoToR BoatinG, the Fiske people recently altered the different names under which their various products were marketed to the uniform trade name of "Lubroleine." They have recently issued a new edition of their booklet entitled the "Mission of Lubroleine," in which their lubricants are fully described.

(Continued on page 68.)

Yard and Shop.

(*Continued from page 66.*)



Location of the new quarters of the Luders Marine Construction Co., at Stamford, Conn.

A Good Text Book for the Amateur Sailor.

The Norman W. Henley Publishing Company, 132 Nassau street, New York City, has just issued a practical treatise for motor boatmen, yachtsmen, campers, etc., entitled "Knots, Splices and Rope Work," written by A. H. Verrill. The book contains 128 pages in which are given complete and simple directions for making all the most useful and ornamental knots in common use, with chapters on splicing, pointing, seizing, serving, etc. The text is illustrated with 150 cuts, showing clearly the different steps in making the knots as well as the appearance of the knot when finished. The book is priced at 60 cents. The company has also published "Brazing and Soldering," by James F. Hobart, and "House Wiring," by Thomas W. Poppe.

Ontario Adds a Little One.

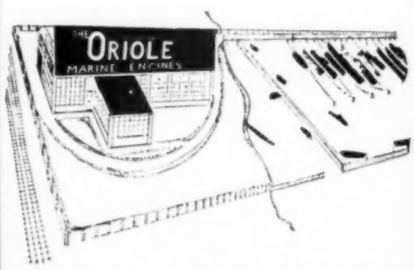
The Ontario Iron Works, Pulaski, N. Y., have added this year a 1½ h. p. single-cylinder to their line of two-cycle, three-port valveless motors. This little machine weighs, complete, only 59 lbs. and sells for about $50 with propeller and shaft and full electrical equipment. It has an oval head cast solid with the cylinder which is thoroughly water-jacketed, as well as the cylinder walls and the number of parts employed in its construction have been reduced to a minimum. The motor is intended for use in row boats and such small craft and was designed with an especial eye to this class of work. It is safe and strong, easy to manage and made to last.

Sales and Charters.

The Hollis Burgess Yacht Agency, 15 Exchange street, Boston, Mass., has sold the 52 ft. motor boat Totem owned by R. H. Hammond of Worcester, Mass., to Fremont Kimball, of Wakefield, Mass.; the 40 ft. motor boat Hessian owned by Commodore Jas. A. Boyd, of the Savin Hill Yacht Club, to Geo. B. Morrill, of Portland, Me., and the 33 ft. waterline sloop yacht Lady Mary owned by G. K. Simonds, of Fitchburg, Mass., to Philip L. Saltonstall, of Boston, who will change her to an auxiliary for use on Vineyard Sound.

A Substantial Relic.

A. B. Sands & Son Co., 22 Vesey street, New York City, have reported an interesting fact that speaks well for the lasting qualities of the marine plumbing supplies manufactured by them. A short time ago there was occasion to examine a toilet fixture on a yacht built in 1877. The fixture had been installed when the vessel was built and had had no repair parts in all the time it had been in operation. The pump parts were coated with a thick accumulation of paint and dirt, so that the name of the maker could not at once be discerned, but after considerable scraping the name of A. B. Sands & Son Co. was brought to light. The fixture is still giving satisfactory service after 35 years' use.



Plant of the Page Engineering Co., Baltimore, Md., showing part of the new marine basin.

(*Continued on page 70.*)

Yard and Shop.

(*Continued from page 68*)

Trade Literature Received.

XARGIL MFG. CO., Utica, N. Y. "One Day." Tells how the motor boatman gave his skeptical friend a practical demonstration of the merits of the Utica long stroke kerosene marine engine. In the back of the booklet are found specifications and prices of the 1½, 4½, 12 and 22 h. p. 2 cycle Utica motors made by the company.

COLUMBIAN BRASS FOUNDRY, INC., Freeport, L. I., "Propellers in a Nut Shell." An attractive little catalogue showing the wide range of types and sizes of propeller wheels made by the company, as well as rudders, struts, stuffing boxes, etc.

FAIRBANKS, MORSE & CO., INC. General Catalog No. 60. A very comprehensive volume bound in cloth and containing no less than 656 pages, wherein are shown the gasoline engines of both the marine and stationary type produced by the company, the complete electric lighting and power plants, and the great variety of railroad and general supplies bearing the Fairbanks-Morse name. Fairbanks-Morse type "S" marine motors are four cycle machines built in 4½, 9 and 18 h. p. The heavy duty type "B" engines are designed to develop 20, 30 and 40 horse power. Catalog 80 G describing Fairbanks-Morse engines designed mainly for farm purposes. Also bulletins describing water supply systems and electrical apparatus.

RACINE BOAT CO., Racine, Wis. Three booklets describing respectively the Racine line of cruisers, open motor boats and speed craft, and rowboats. Racine boats are built in a wide range of types to suit every requirement and some very interesting designs, especially in the cruiser class, are shown in the company's literature.

MOTOR BOAT AND SUPPLY CO., 1411 West 9th street, Cleveland, O. New 125-page illustrated catalogue of boats, engines and supplies. A discount sheet is provided, thus saving the purchaser the trouble of figuring his own discounts. The catalogue will be sent free on request.

CHAS. E. MILLER, 97-103 Reade street, New York City. Annual Catalogue No. 22, 1912. A book of 256 pages in which the large line of supplies which Miller keeps in stock of every description and for every purpose that could possibly occur to a motor boat or motor car devotee is fully described. The catalogue has an attractive cover printed in three colors and any interested person can obtain a copy by simply asking for it.

L. W. FERDINAND & CO., 201 South street, Boston, Mass. Leaflets describing Jeffery's marine glue in its various grades, and indicating the proper method of application. Jeffery's marine glue is made in the following grades for the following purposes: No. 1, extra quality, for paying deck and hull seams; No. 2, first quality ship glue, for the deck seams of merchant vessels; No. 3, special navy, used by the U. S. Navy Department; No. 7, soft quality glue, for waterproofing canvas and attaching canvas to wooden hulls.

DeLONG ENGINE CO., Rochester, N. Y. Postal illustrating and describing the DeLong 2½ h. p., 3 x 3½ in. marine motor for canoes, runabouts and tenders. This little machine is listed at $39.50. Catalogue will be sent on request.

CONCRETE FORM & ENGINE CO., Detroit, Mich. Price list of Belle Isle motors and accessories. These engines are made in sizes of 2, 4, 6 and 10 h. p., both single and double cylinder. Also vest pocket catalog of reverse gears, propeller wheels and marine hardware.

THE K-W IGNITION CO., Cleveland, O. Catalogue No. 17. A very detailed and full account of K-W ignition apparatus contained in 64 pages, illustrated with 50 half tones and 30 line cuts. An interesting feature is on pages 33 to 37 where directions are given for mounting K-W lighting magnetos on motor cars not equipped for the magneto. The line of motor boat lights made by the company is fully described.

THE CLEVELAND AUTO BOAT MFG. COMPANY, of Cleveland, Ohio, makers of Auto Craft motor boats, have issued a handsome new catalogue illustrated with large photographs showing both the exterior and interior of their various boats as well as a number of line drawings. The specifications are given complete so that the prospective purchaser will know just what he is getting.

THE ATLANTIC COMPANY, Amesbury, Mass., has issued a 5 x 8 booklet of blue prints showing their standard lines of Gurnet dories and other craft with a brief description of each model. The cover is a reproduction of a pen and ink drawing of a Gurnet dory in a seaway by the well-known marine architect Worden Wood.

THE MICHIGAN WHEEL COMPANY, Grand Rapids, Mich., has issued a handy little vest pocket catalogue for ready reference showing the famous Michigan speed wheel in different types and sizes, reverse gears and marine hardware.

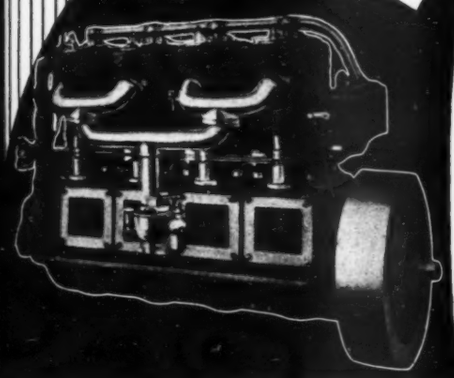
THE LACKAWANNA MFG. COMPANY, 126 Liberty street, New York City, have gotten out their new catalogue of Lackawanna marine gasoline engines. The different models and sizes are shown in great detail and the features of construction are fully illustrated and clearly explained.

THE J. E. LONERGAN COMPANY, Philadelphia, Pa., Catalogue of gas and steam engine and boiler fittings.

THE CHANSLOR & LYON MOTOR SUPPLY COMPANY, San Francisco, Los Angeles and Fresno, Cal., Seattle and Spokane, Wash., and Portland, Ore. Catalogue of the large and comprehensive line of accessories carried by the company.

GRAY MOTOR COMPANY, Detroit, Mich. A Book of Boats. Pages of photographs of motor boats in which Gray engines are installed interspersed with letters from satisfied Gray users.

Anderson ENGINES



Don't be Prejudiced

The good points of the engine you know may be completely eclipsed by some other engine.

You can't KNOW without investigating.

Be Fair. Investigate. Tell us what sort of craft you wish to equip and let us prescribe. Then Compare—Compare—Compare.

Made in America. Sold and used in practically every country on the globe.

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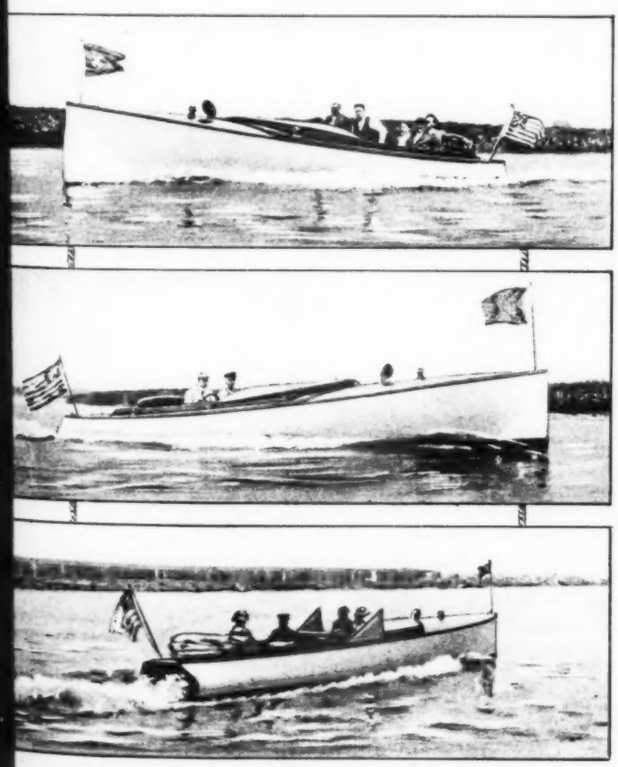

5' 4" High Speed Runabout RITA. 45-65 H.P. Sterling engine installed.

Owners call

MATTHEWS CRAFT

"The Perfect Boat"

A letter received from one of America's most popular actors tells the story of Matthews' service:

Isleridge, Hobe Sound, Fla.
March 25, 1912.

The Matthews Boat Company,
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Gentlemen:

The "Rita" has been a *most* satisfactory boat in *every* way, and I am most pleased with her.

Yours regarding a larger and more powerful boat received, and if with all that power, 130-140 H. P., she could only make 29 miles an hour, I don't think I'll make the change, as the "Rita" comes close to 25 miles now, and as I said, she's a perfect boat.

Yours very truly,

(Signed) CHAUNCEY OLCOTT.

Mr. Olcott's experience is nothing out of the ordinary, as every Matthews Craft is sold with a guarantee of satisfaction.

Florida boats for the coming season should be started now. Catalogue for interested buyers.

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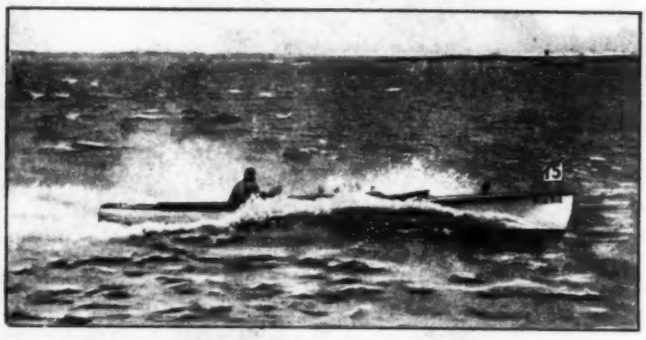
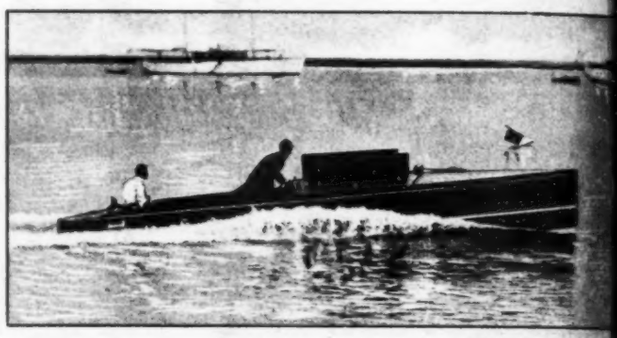


"DIANA"—powered with a 100 H. P. Sterling



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is the racing game. You can't win unless you've got the power and endurance back of your boat. Four STERLINGS started in the big Florida regattas. All finished their races.

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by luck or chance. It's found only through concentration; the correct solving of engineering problems; the selection of suitable materials and the proper assembling of parts.

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18-25 H.P.	4 cylinders
25-40 H.P.	4 cylinders
30-45 H.P.	4 cylinders
35-55 H.P.	6 cylinders
45-65 H.P.	6 cylinders
150 H.P.	8 cylinders
240 H.P.	8 cylinders

HEAVY DUTY

8-10 H.P.	2 cylinders
12-15 H.P.	2 cylinders
20 H.P.	2 cylinders
25-35 H.P.	4 cylinders
40 H.P.	4 cylinders
60 H.P.	6 cylinders
100 H.P.	8 cylinders

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